

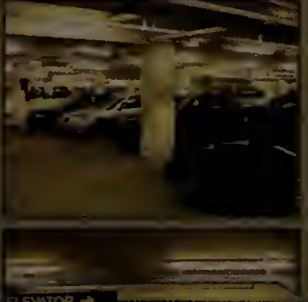
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The Web site of the Chicago Board of Trade includes several photos of the facility's underground parking garage.

Online Data a Gold Mine for Terrorists

IT's high-alert response overlooks corporate sites

BY DAN VERTON
AND LUCAS MEARIAN

The widespread availability of sensitive information on corporate Web sites appears to have been largely over-

looked by IT and security managers who responded last week to the Department of Homeland Security's warning of a heightened terrorist threat against the financial services sector.

Freely available on the Web, for example, are 3-D

models of the exterior and limited portions of the interior of the Citigroup Inc. headquarters building in Manhattan — one of the sites specifically named in the latest terror advisory issued by the DHS. Likewise, details of the Citigroup building's history of structural design weaknesses, including its susceptibility to toppling over in high winds, the construction of its central support column and the fire rating of the materials used in the building, are readily available on the Web.

A Citigroup spokeswoman declined to comment, referring the matter to the building owner, Boston Properties Inc.

Similarly, the Web site of the Chicago Board of Trade includes photographs of the facility's underground parking ga-

ONLINE

Is the genie out of the e-bottle?

QuickLink
48675

Online Data,
page 16

'Breakthrough' VoIP Project Breaks Down

BY PATRICK THIBODEAU

In 2001, The Dow Chemical Co. unveiled plans to create a voice-over-IP network that would also provide data and video capabilities. In a chest-thumping announcement, Dow said its converged network would be a "breakthrough solution" that would

be "setting the standard for other Fortune 100 companies."

What a difference three years can make. Lead contractor Electronic Data Systems Corp. is now off the project, replaced last week by IBM, which is being tasked with building what Midland, Mich.-based Dow expected to be substantially completed by

Dow, page 16

MORE INSIDE

Still burdened by N/MCI, EDS strives to remove 'problem contract' from its lexicon. **PAGE 14**

Corporate America Slow to Adopt Biometric Technologies

Growth stalled due to cost, interoperability and reliability issues

BY JAIKUMAR VIJAYAN

Biometric authentication technologies, which were expected to be widely adopted fol-

lowing the Sept. 11 terrorist attacks, are still struggling to gain broad acceptance in corporate America.

Despite the much-touted benefits of technologies such as fingerprint, voice, iris and facial recognition systems, the

Biometrics, page 45

SHOW SOME Initiative! **PAGE 33**

Beaten down by budget cuts, IT is at risk of being intimidated into an order-taking role. But Julia King shows how CIOs like Michael H. Hugos (right) of Network Services Co. overcame resistance to their brilliant but unsolicited ideas.



**ANOTHER EXPERT WEIGHS IN ON THE
TCO OF WINDOWS AND LINUX.**



"We got to market six months faster, and saw 14 percent in cost savings over Linux, using Windows Server System.™"

*—Owen Flynn, Chief Technology Officer
Equifax Inc.*

Equifax, a leading provider of consumer and commercial credit information, chose Windows Server System because it allowed them to deliver new and improved services with a 14 percent savings in total cost of ownership. With their new Windows-based supercomputer cluster, Equifax is able to manage its database of over six billion data components with dramatic increases in performance and efficiency. To get the full case study, other case studies, or third-party findings, visit microsoft.com/getthefacts



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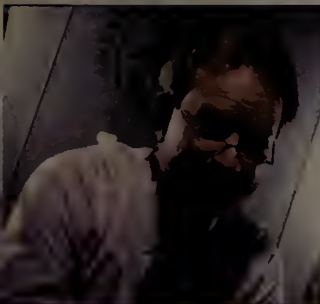
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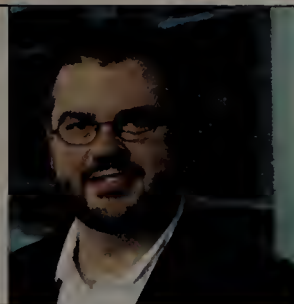
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08.09.04



Controlling Content Chaos

In the Technology section: IT managers like Herman Baumann of the American Hospital Association (left) are feeling increased pressure to carefully track and consolidate their organizations' key content, and they're looking to content management software for help. **Page 25**



Cigna Goes Virtual

Also in the Technology section: A simple server consolidation project has grown into much more, as Cigna moves aggressively to new operating systems, 64-bit processors and nascent "virtualization" software from IBM and Microsoft, says CTO Marcus Shipley (left). **Page 23**

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ONLINE

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So Much Information, So Little Relevance

WEB SITE MANAGEMENT: Early efforts might have come up short, but effective Web site personalization implementations are finally starting to bear fruit, says ChoiceStream's Steve Johnson. **QuickLink 48464**

Making Lemonade From a Team of 16 Lemons

IT MANAGEMENT: Project manager Bryan K. Beverly assesses a team of 16 misfits and tries to come up with the best way to utilize each one — even Bad Luck Bob and Incompetent Ernie — to get the job done. **QuickLink 48495**

Control Access to Your Network

SECURITY: Steve Gant, CEO of Trusted Network Technologies, provides five tips for enforcing access control and improving security around critical assets. **QuickLink 47271**

Planning a Departmental SAN

STORAGE: Emulex's Mike Kane outlines some of the options available for expanding storage capacity. **QuickLink 48490**

Googling for Security Holes

SECURITY: Malicious hackers can use search engines to parse through a Web site's source code and find openings that are vulnerable to attack. **QuickLink 48474**

What's a QuickLink?

Throughout each issue of *Computerworld*, you'll see five-digit QuickLink codes pointing to related content on our Web site. Also, at the end of each story, a QuickLink to that story online facilitates sharing it with colleagues. Just enter any of those codes into the QuickLink box, which is at the top of every page on our site.

ONLINE DEPARTMENTS

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- Newsletter Subscriptions
QuickLink a1430
- Knowledge Centers
QuickLink a2570
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AT DEADLINE

Microsoft Puts SP2 Into Manufacturing

Microsoft Corp. released Windows XP Service Pack 2 to manufacturing on Friday, after postponing the move two days earlier to do more development work on the security-focused update. SP2's overall size is 265MB, but Microsoft said the average download should be about 100MB for XP Professional users who have SP1 and are up to date on patches.

IRS to Cut IT Staff At Processing Sites

The U.S. Internal Revenue Service said it plans to cut 218 of the 278 IT workers at its 10 tax processing centers by next June. The cost-cutting move will affect computer operators, IT specialists and tape library administrators in the agency's high-speed printing division. The use of new technology has increased the level of automation at the processing centers, an IRS spokesman said.

PeopleSoft Wins \$50M Mexico Deal

PeopleSoft Inc. said Mexico's income tax agency has awarded it a contract worth more than \$50 million over two years, the largest software and services deal in the company's history. PeopleSoft will provide Mexico's Tax Administration Service with its finance and CRM software, plus other products. PeopleSoft said the agency chose it over SAP AG and Oracle Corp.

MCI Loses \$71M In Second Quarter

MCI Inc. reported a \$71 million net loss for the second quarter, compared with a profit of \$8 million in the year-earlier quarter. MCI, which emerged from bankruptcy protection in April, said second-quarter revenue totaled \$5.2 billion. "We've made tremendous progress, but we realize we have more work to do," said CEO Michael Capellas.

HP User Groups Forge Ahead With Conferences

Will hold their own events next year despite vendor's effort to consolidate

BY MATT HAMBLÉN AND PATRICK THIBODEAU

THREE Hewlett-Packard Co. user groups confirmed last week that they will continue to hold independent user conferences despite HP's drive to consolidate the events into a new technology conference to be held in September 2005.

The three user groups had been invited to collaborate with HP in the unified event, currently being called the HP Technology Forum Expo. A fourth invited user group, Encompass, said last month that it will support the new HP conference [QuickLink 48350].

Last week, Interex, the largest HP user group, with 100,000 members, said its decision to continue to hold its HP World event in 2005 is in the best interests of its membership. "We just believe that being fully independent, yet loyal to our vendor of choice, would be best for everyone involved," said Denys Beauchemin, president of Sunnyvale, Calif.-based Interex.

OpenView Forum International (OVFI), a group of 8,000 HP software users, will proceed with plans to hold its Software Forum conference in Denver in June 2005, officials

said. And ITUG, the former Tandem user group, plans to continue holding its ITUG Summit, next scheduled for October in San Jose.

When the HP plan for a new conference surfaced last month, some users viewed it as a competitive challenge to user group conferences, a major source of their revenue. HP said that the idea for a single conference was to "coalesce" the content of the user group events and that it came in response to requests by HP customers for comprehensive information about hardware and software technologies.

Support Questions

But some user group members argued that a conference sponsored by the vendor would be marketing-driven, as well as a threat to the groups' independence. HP has provided funding to the user group conferences, usually through sponsorships. It's unclear whether or how HP's contribution to those events will change.

David Parsons, vice president of HP Americas, said HP "will continue to support our groups" as they hold conferences. "We've not decided the level of support, but clearly there will be some level of

support as we go forward, and those relationships [with user groups] are key," Parsons said.

Parsons said the decision of the three user groups to forge ahead with their own conferences will have no bearing on HP's plans for its new technology conference.

OVFI plans to participate in the new HP conference in 2005 and is unsure how that conference will affect its own 2006 plans for Software Forum, said OVFI President Henry Wojcik. OVFI "is a little bit concerned about our future," he said. "In 2006, the success of their 2005 conference dictates what happens to us."

While OVFI and HP "have a friendly relationship... that we'd like to continue," Wojcik said, "our membership likes our independence as a group, and our openness."

Beauchemin said that if Interex's participation in the new HP technology event is deemed to be worthwhile by its members, then Interex will be there. "We're open to [involvement with the new event], but our main focus is on HP World," he said. "This is an extremely big decision for us, to continue our show. We took a long time to decide and polled our members."

Parsons said the date, location and formal name of HP's new show will be announced within three weeks. "The big idea is that there will be a deep-dive technical focus on products and solutions and hands-on labs, with a primary focus on technical training [to meet the] needs of customers, partners and HP employees," he said.

Parsons said HP doesn't want to appear to be in competition with the user groups. In meetings with them about holding a unified conference, he said, "I learned there is a lot of passion around the independence of these groups."

48643

Independent Events Outlast Comdex, CeBIT

HP WORLD organizers are expecting a 10% increase in attendance over last year at their conference next week, and some other user groups said they're seeing attendance increases at their events as well.

Unlike the organizers of CeBIT America 2005, which was canceled last week [QuickLink 48591], and this year's Comdex, which was canceled in June [QuickLink 47727], the user groups are optimistic about the future, even though they have seen attendance at their events decline in recent years as a result of the economic downturn.

HP World is expecting more than 7,000 people at its Chicago event, said Ronald W. Evans, executive director and CEO of the Interex user group. Evans said he's convinced that focused events are what users want and the days of Comdex-like trade shows are gone.

Bob Boyson, president of Common, a Chicago-based IBM user group, said attendance at its San Antonio conference in May was up 10% to about 2,300.

Kenneth Ebbe, president of Share Inc., an IBM user group that's holding a conference in New York on Aug. 16, said attendance is holding steady from last year, and he expects between 2,000 and 2,200 at the conference. The Chicago-based group turns 50 years old next year.

Ebbe said he's concerned that the recently heightened terrorist alert may have an impact on attendance. But he said he's committed to New York as a conference location, noting that many Share members live in that area.

User groups typically reported larger attendance figures in earlier years. HP World had about 12,000 attendees in 2000, and Boyson said there were as many as 6,000 at an early 1990s Common conference.

- Patrick Thibodeau

User Group Funding

GROUP*	BUDGET	FUNDING SOURCE	AMOUNT
OpenView Forum International	\$1.8M	■ Conference registration fees ■ Non-HP exhibitor fees and sponsorships ■ HP contribution as sponsor	\$1 million \$500,000 \$300,000
Interex	\$7M-\$8M	Conference fees, booth rentals, sponsors, magazines/publications, advertising, membership fees	Declined to provide breakout
* No data available for Encompass or ITUG			

IT Managers Eye Desktop Linux, But Migration Challenges Remain

LinuxWorld attendees weigh potential cost savings vs. technology's immaturity

BY TODD R. WEISS
SAN FRANCISCO

The idea of using Linux on corporate desktops was a laughing matter when the open-source operating system began infiltrating data centers a few years ago. But at last week's LinuxWorld Conference & Expo here, many IT staffers said their companies aren't laughing anymore.

That doesn't mean all the potential hitches facing desktop Linux migrations have been eliminated, according to nine attendees and two analysts. Nonetheless, IT managers such as Dan Pritchard said they're eyeing Linux as a possible alternative to Windows on end-user PCs.

Pritchard, director of IT at Foster City, Calif.-based Entelos Inc., said the life sciences company likely will move its 90 users to a desktop release of Linux when its Windows maintenance contract comes up for renewal — provided that the open-source software works better with Research In Motion Ltd.'s BlackBerry mobile devices at that point than it does now.

"Usually where it all falls apart is linking it to [BlackBerries]," Pritchard said. But he added that the cost savings promised by desktop Linux are alluring. "It's the money that will get the executives to sign, given that Microsoft continues to do more and more maintenance [fee] increases," he said.

Burlington Coat Factory Warehouse Corp. runs about 3,000 Linux-based PCs in its corporate offices and its 360 retail stores, said Matt Fahrner, manager of network ser-

vices at the Burlington, N.J.-based company. The retailer gives its Linux users Sun Microsystems Inc.'s StarOffice applications or the OpenOffice.org software suite instead of Office. "Most of what we need to do, we can do [with those applications]," Fahrner said. "It's not a handicap."

Different Paths

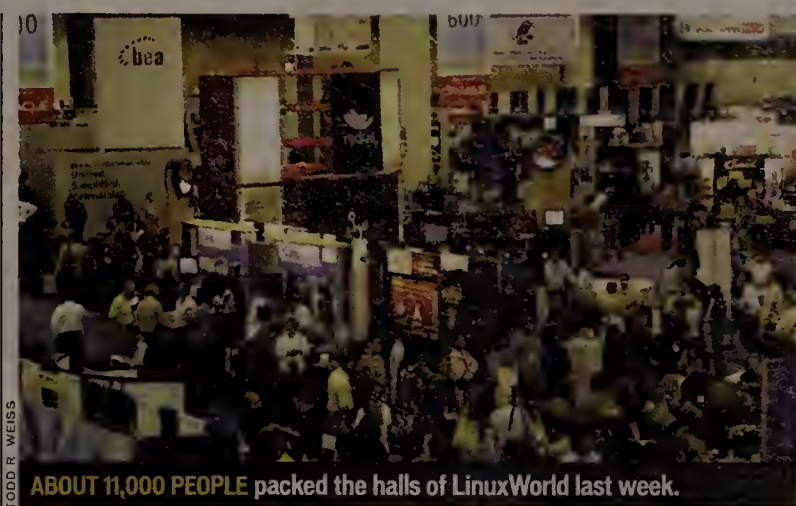
IT managers at two other large companies, who asked not to be identified, voiced differing expectations about the likelihood of deploying Linux on their desktops.

A vice president for IT at a grocery store chain said his company will start using Linux-based servers within the next

three months for a pilot project involving in-store customer marketing programs. But the company isn't likely to move to Linux on the desktop because it gets heavily discounted, long-term pricing on Windows and Office from Microsoft Corp., he added.

However, a Linux systems engineer at a bank with more than 100,000 users said that desktop Linux is very much a topic of discussion internally because of its promised cost savings. "In the banking environment, it's always about money," he said. The bank plans to run a desktop Linux pilot project next year.

Desktop Linux news was sparse at the conference. Novell Inc. showed a demo copy of a new desktop release of its SUSE Linux software and said it will announce detailed plans



ABOUT 11,000 PEOPLE packed the halls of LinuxWorld last week.

this fall. Hewlett-Packard Co. unveiled a notebook PC that's preloaded with Linux.

During a panel discussion, speakers offered suggestions for companies contemplating migrations to desktop Linux. First, there has to be a solid reason to make the switch, they said. In addition, needed applications must be available on Linux. Driver support and interoperability with systems that run Windows is also important, as is making sure that the IT support team is experi-

enced with Linux, the panelists said.

J. Craig Manning, manager of IT at Cisco Systems Inc., said that one of the biggest challenges to its desktop Linux plans is a lack of support for applications from independent software vendors. He noted that a system Cisco uses to track technical support requests runs well on Windows but not as well on Linux. "That's where we're having a lot of trouble, with the ISVs," Manning said. ☎ 48671

HP Exec Calls for Fewer Open-Source Licenses

SAN FRANCISCO

The large number of licenses that software vendors are using to release open-source code is becoming a significant issue for developers and IT managers, according to Hewlett-Packard Co.'s top Linux executive.

"A lot of people don't realize that today there are dozens and dozens of open-source licenses," Martin Fink, vice president of Linux at HP, said in a speech at LinuxWorld. Fink added that he had counted a total of 52 different open-source licenses and predicted that the number would likely increase by the end of the conference.

Open-source licenses are approved by the Open Source Initiative (OSI), a nonprofit company that has certified licenses from organizations as diverse as NASA, MIT and Apple Computer Inc.

The issue of whether there are too many licenses has attracted the attention of the OSI board and has the potential to become a serious topic of discussion,

said OSI President Eric Raymond. There is "a strong chance" that the organization will become more restrictive in the number of licenses it certifies, though it has not put such a policy in place yet, he said in an e-mail interview.

The majority of OSI-certified licenses are used in a very small number of open-source projects, Raymond added. "All but a dozen of these are vanity licenses, usually [written] by a corporate legal department with too much time on its hands [and] used on exactly one project," he said.

But Fink contended that the

number of open-source licenses is already out of hand. "There really is no value, and there is only confusion in having that many licenses," he said.

To date, HP hasn't seen the need to create a new license for its own open-source contributions, choosing instead to release its software under existing licenses, Fink said. "I approve on average three to five open-source projects and contributions every single week," he said, directly addressing other vendors at the conference. "If I have never had to create a new license, I have a really hard time understanding why you think you do."

Any confusion brought on by the proliferation of open-source licenses is probably a bigger issue for software vendors than it is for IT managers, said Chris Hjelm, chief technology officer at online travel services firm Orbitz LLC. Vendors need to ensure that the various products they sell don't have incompatible licenses, Hjelm noted.

But he added that the expanding number of licenses does affect companies such as Chicago-based Orbitz, which uses a variety of open-source software. "If everyone sort of opted out of the licensing game, it would make everyone's life a little easier," Hjelm said.

Orbitz is currently using a tool developed by Waltham, Mass.-based Black Duck Software Inc. to audit its internal open-source code. The product, called ProtexIP, lets IT managers track the open-source contributions of their software developers and help ensure that their companies comply with open-source licensing terms. "The promise is that they'll manage this complexity," Hjelm said.

For software vendors toying with the idea of adding to the plethora of open-source licenses, Fink offered some final words of advice in his speech. "If you're out there and you're a vendor and you're planning to create a new license — stop," he said. "Please don't."

— Robert McMillan,
IDG News Service

“If everyone sort of opted out of the licensing game, it would make everyone's life a little easier.”

CHRIS HJELM, CTO, ORBITZ

MORE FROM LINUXWORLD

Novell's CTO talks about the company's integration of SUSE Linux and Ximian into its operations:

QuickLink 48618
www.computerworld.com

BRIEFS

Microsoft CRM Will Need Fixes for SP2

Microsoft Corp. released patches to help ensure that its CRM applications will work correctly with Windows XP Service Pack 2. The patches are for Version 1.2 of the Microsoft CRM server and the Outlook client version of the vendor's sales force automation software. But manual work-arounds will be needed to address some issues between SP2 and the CRM tools, Microsoft said. It added that Microsoft CRM Version 1.0 won't work with SP2 at all.

Sun Builds Linux Code Into Solaris

Sun Microsystems Inc. is developing software called Janus that's designed to make it easier for users to run Linux applications on Solaris systems built around x86 processors. The new code will run inside the Solaris kernel and support applications written for Red Hat Inc.'s version of Linux, Sun said. Janus is due to be included in Solaris 10, which is scheduled for release by year's end.

SEC May Charge Business Objects

Business Objects SA said it was notified that the U.S. Securities and Exchange Commission's staff plans to recommend a civil action against the business intelligence software vendor for allegedly violating securities laws. The SEC is investigating the Paris-based company's policies for reporting its backlog of unshipped orders, Business Objects said. It vowed to "vigorously" defend itself.

Short Takes

IBM was tapped by the U.S. Army to build a clustered supercomputer that will run SUSE Linux and include more than 2,300 Opteron processors. . . . City officials in MUNICH have put a planned desktop Linux migration on hold due to concerns about conflicts with more than 50 software patents.

Pentagon Urged to Fix Procurement Processes

GAO says Defense Department should copy corporate IT on business systems

BY MARC L. SONGINI

THE U.S. Government Accountability Office (GAO) has issued a call for the Department of Defense to reform its business system procurement policies and align them with corporate project management practices.

In a report that was sent to Congress on July 30, the GAO made 14 recommendations aimed at strengthening the Pentagon's acquisition policies for business systems as well as its controls for ensuring that proper procedures are followed. The GAO warned that if its recommendations aren't heeded, future IT investments by the DOD will be put at risk.

And the financial consequences could be huge, the GAO claimed. Of the \$28 billion in IT funding that the Pentagon requested for the government's current fiscal year, \$19 billion will go toward operations, maintenance and modernization of business systems as opposed to military command-and-control systems, according to the GAO.

The GAO, then called the General Accounting Office, was asked late last year by the U.S. Senate's subcommittee on military readiness and management support to evaluate the Pentagon's latest procurement guidelines to see if they were consistent with private-sector best practices and included sufficient controls on DOD units.

The GAO report said recent revisions by the DOD do incorporate many procedures followed by corporate users, such as the need to economically justify systems investments and to continually measure projects against financial baselines. But it added that the Pentagon left out other best

practices, most notably ones related to rollouts of packaged applications.

DOD officials told the GAO that more best practices will be added by Sept. 30 to the procurement guidelines, which are officially called the 5000 series of documents. But there are no documented plans for doing so, the GAO said, and the required personnel haven't been assigned yet "due to higher-priority needs."

Among the recommendations made by the GAO is a suggestion that the DOD create a formal plan to incorporate missing best practices. The report also calls for the Pentagon to discourage modi-

fication of third-party applications and develop plans to evaluate systems integrators based on their ability to install commercial applications.

Another hole involves risk management processes for identifying potential problems

“Until these missing best practices are included in DOD's acquisition policies and guidance, the risk is increased that systems acquisitions will not deliver planned capabilities and benefits on time and within budget.”

■ EXCERPT FROM THE GAO'S REPORT ON PURCHASES OF BUSINESS SYSTEMS BY THE DEPARTMENT OF DEFENSE

and creating plans for dealing with them, the GAO said. Without such oversight capabilities, it's "likely that acquisition risks will become cost, schedule and performance problems," the GAO said.

The DOD didn't respond to requests for comment on the report by *Computerworld's* publication deadline. In a letter to the GAO that was included in the report, the Pentagon said it agreed with some of the recommendations. But it disagreed or only partially concurred with others.

For example, the GAO's call for a detailed plan for beefing up the business system policies is unnecessary and "inappropriate," the DOD said in its letter, which was signed by Deputy Assistant Secretary of Defense John R. Landon.

Landon also said that the Pentagon doesn't see the need to incorporate risk management processes into the IT procurement guidelines because it already has sufficient processes in place. **48635**

SSA Mixes Baan Apps, Two Other ERP Lines

BY MARC L. SONGINI

After a delay of nearly a year, SSA Global Technologies Inc. last week released a Web-based upgrade of its Baan ERP applications and said it also plans to offer the software as a migration platform for users that run two of its other manufacturing application suites.

Chicago-based SSA said the new SSA ERP LN 6.1 software was designed to cater to all of its discrete manufacturing customers, including Baan's installed base and users of the company's ManMan/HP and MK product lines.

The LN suite is the first of two new offerings SSA is developing to converge the various ERP applications it has acquired over the past three years. Early next year, the vendor plans to add SSA ERP LX, which will be aimed at users of its BPCS, PRMS, Prism and Infinium MM/PR applications

for process manufacturers.

SSA ERP LN 6.1 includes a Web-based user interface and incorporates Web services technologies that were developed by the former Baan NV, which became a subsidiary of SSA in July 2003.

As of last September, Baan had spent about \$100 million developing the next generation of its software, code-named Gemini, which was due for release that month. But SSA put shipments on hold because of shortcomings that included a lack of integration with Baan's CRM and logistics applications [QuickLink 41699].

In addition, SSA officials wanted to consolidate similar applications into unified offerings [QuickLink 41671]. They eventually decided to combine Gemini and the converged discrete manufacturing software into a single release, said Cory Eaves, vice president of solu-

tions management and research at SSA.

Eaves added that SSA is also readying migration tool kits to help Baan, ManMan/HP and MK users automate tasks during upgrades to SSA ERP LN.

SSA's convergence moves are welcome news for Marsha Williams, vice president of IT at Sorin Group, a Milan, Italy-based medical products conglomerate. "As users of BPCS, we are eagerly awaiting the convergence of the LN and LX platforms, which will truly create a best-in-class offering," Williams said via e-mail.

The new release shows that SSA wants to be more than a graveyard for its ERP acquisitions, said John Moore, an analyst at ARC Advisory Group Inc. Moore said the migration paths SSA is offering should breathe "new life into what were a series of increasingly moribund solutions." **48659**

Mark Hall is on vacation. His column, On the Mark, will return Aug. 23.

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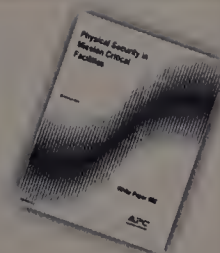
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NYSE to Upgrade, Expand E-trading

Plans IT changes to support accelerated shift from manual transaction processes

BY LUCAS MEARIAN

THE NEW YORK Stock Exchange last week announced a plan to expand its use of computer-based trading in an attempt to better compete against all-electronic rivals like Nasdaq Stock Market Inc. and Archipelago Holdings LLC.

The NYSE filed a request with the U.S. Securities and Exchange Commission seeking approval for the proposed change to its operations, which would shift more transactions away from the manual auction system that now dominates the exchange's trading floor.

But the NYSE said that the expansion of its 3-year-old NYSE Direct+ order execution system likely won't start to be phased in for another 12

months or so. In addition to waiting for regulatory approval from the SEC, the exchange noted, its IT staff needs to modify the order-routing software within the Direct+ system.

Analysts who follow IT issues in the financial services industry said they think the NYSE will also have to add more systems and increase its network bandwidth to keep up with the expected increase in

The New York Stock Exchange is bringing its trading system into the modern era.

WAYNE LEE, SPOKESMAN, NASDAQ

electronic trading volumes.

Direct+ offers subsecond trade-processing speeds, said NYSE spokesman Raymond Pellicchia. In comparison, it takes an average of about 14 seconds to complete trades via the exchange's manual approach, in which so-called floor traders take stock order tickets that are given to specialists and then typed into the exchange's systems by another floor trader.

Currently, though, only about 10% of the NYSE's daily trading volume is executed electronically through Direct+, according to Pellicchia. In addition, individual trades are limited to 1,099 shares at a time. Pellicchia declined to say how much of the trading volume is expected to shift to Direct+ after the system expansion work is completed.

The price of upgrading the



Direct+ system "is not something we've costed out yet," he added. "But it won't be an obstacle... to doing it."

Along with making modifications to the Direct+ software to allow an unlimited volume of stocks to be traded electronically, the NYSE plans to give its floor traders new handheld computers that they will be able to use to enter orders directly into the system.

Nasdaq spokesman Wayne Lee said officials at the New

York-based stock market don't see the NYSE's initiative as something that will put Nasdaq at a competitive disadvantage. "We just simply think the New York Stock Exchange is bringing its trading system into the modern era," Lee said.

Robert Haggerty, an analyst at TowerGroup in Needham, Mass., said investors have been pushing the NYSE for years to remove its volume caps on electronic trades. But the tradition of writing out trade tickets has been hard to overcome, he added.

"The other reason there was so much resistance is that it does take away the floor broker's ability to interact with the orders and thereby make money off those transactions," Haggerty said. But now the NYSE is "taking a run at Nasdaq," he said. "It's a dogfight."

NYSE CEO John Thain said the exchange will continue to offer trades via floor brokers because they add a "human judgment" to the process. But, he noted, NYSE officials "are seeking to upgrade significantly our use of technology to execute securities transactions." **48654**

British Bug Hunter Finds 34 Flaws in Oracle Apps

BY JAIKUMAR VIJAYAN

Oracle Corp.'s ongoing effort to portray itself as a vendor of "unbreakable" technology received a setback last week when a British bug hunter disclosed that he had found 34 security vulnerabilities in the database vendor's products.

The flaws include several that could allow malicious attackers to gain complete administrative control of compromised database servers, claimed David Litchfield, managing director of Surrey, England-based Next Generation Security Software Ltd.

"They include buffer overflows, SQL injection issues and a whole range of other minor issues," said Litchfield. He said that he reported them to Oracle in January and February following his discovery.

"Some of them can be ex-

ploited without a user ID and password, while others require them," Litchfield said. He refused to provide further details of the flaws, citing his concern that doing so before patches are distributed could pose a security risk for users.

Some users defended Oracle's security record.

"I'm always very concerned about any flaws," said Howard Muffler, director of enterprise services at Embry-Riddle Aeronautical University in Daytona Beach, Fla. But the university, which licenses a wide range of Oracle products, has had few security issues with them so far, Muffler said. "Oracle has always done a very good job of addressing security flaws and addressing them swiftly," he said.

Oracle is "incredibly quick to respond to any security is-

sue," agreed Rich Niemiec, former president of the International Oracle Users Group and CEO of TUSC, a Chicago-based consultancy. "There will always be issues that arise, given the complexity of the

software," but Oracle has been diligent in finding and fixing them, he said.

According to Litchfield, Oracle told him that patches were available to fix the problems a few months ago. But the company appears to be waiting for an updated patching process to become ready before releasing the fixes, he said.

"It is my opinion that they could have run the old patching process up until the time that the new patching procedure was ready. There really is no point in exposing users to unnecessary risks," he said.

Oracle last week confirmed the existence of the flaws but refused to provide any further details. A company spokeswoman said Oracle had fixed the flaws and would issue a security alert "soon."

"Security is a matter we take

seriously at Oracle, and while we stand firmly behind the inherent security of our products, we are always working to do better," she said.

News of the latest flaws came about two months after Oracle warned users of a major flaw in its Oracle 11i E-Business Suite and Oracle Applications 11.0 that could let attackers take control of the underlying database.

Even so, Oracle's database is by "leaps and bounds" more secure than competing products, said Don Burleson, president of Burleson Consulting in Kittrell, N.C., and author of several books on the security of Oracle products. He said the newly disclosed flaws are unlikely to pose an immediate threat. "Litchfield has made it his life's mission to find flaws in Oracle's technology," Burleson said, adding that most of the flaws are obscure and not easy to find. **48664**

Spring Flaws

Previous flaws in Oracle products include:

JUNE 2004

Unauthorized access vulnerabilities in Oracle E-Business Suite

JUNE 2004

Security vulnerability in Oracle9i Application and Database Servers

MAY 2004

Security vulnerabilities in Oracle9i Database Server

APRIL 2004

Security vulnerabilities in Oracle Application Server Web Cache

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BRIEFS

SAP Expands Its Workforce in India

SAP AG announced plans to increase the number of software developers at its facility in Bangalore, India, to about 1,500 by year's end and to 3,000 by the end of 2006. The SAP Labs India facility now has about 1,100 employees. CEO Henning Kagermann said SAP also plans to team with unidentified Indian IT firms to offer software services in an effort to lower costs for its users.

Apple CEO Jobs Has Cancer Surgery

Apple Computer Inc. CEO Steve Jobs said in an e-mail message to employees that he had a cancerous tumor removed from his pancreas. The cancer was "a very rare form" that won't require chemotherapy or radiation treatments, Jobs wrote, adding that he plans to return to work next month. Timothy Cook, who heads sales at Apple, will run day-to-day operations in Jobs' absence.

AOL Certifies Tools For Corporate IM

America Online Inc. said it has certified integration tool kits from three vendors for building its instant messaging technology into corporate applications. AOL said in February that it was working with IMlogic Inc. and since then has teamed up with FaceTime Communications Inc. and Akonix Inc. The move follows AOL's recent decision to drop its IM gateway software [QuickLink 47684].

Short Takes

COMPUTER ASSOCIATES INTERNATIONAL INC. released its Ingres database under an open-source license and said the next version is due by Sept. 30. . . . The FEDERAL COMMUNICATIONS COMMISSION voted to examine the policies needed to ensure that voice-over-IP service providers comply with wiretapping rules.

McBride Vows SCO Will Win Legal Fight

CEO says no plans for more lawsuits

BY TODD R. WEISS
LAS VEGAS

WHEN The SCO Group Inc. held its SCO Forum 2004 user conference here last week,

much of the focus remained on the Unix software vendor's legal battles against IBM and other Linux backers. **Darl McBride**, president and CEO of Lindon, Utah-based SCO, struck a defiant tone during his keynote and in a subsequent interview with *Computerworld*, saying that he expects his company to eventually prevail in court and win over many of its critics. Excerpts from the interview follow.



In your keynote address, you said you believe the IT community will "embrace" SCO's legal position after all the evidence in the IBM case is made public. But IT managers in general have reacted negatively since you sued IBM. Why do you think their view will change? I think that what will happen here is when the truth

is on the table and people really understand what happened in the case, there will be a big swing in the public perception about this small company that got clobbered by this big bully. I'm going a year out and saying that between now and then, when the truth gets out in the public filings and people know what we know, people are going to view us in a much more positive light.

Despite the pending cases against

IBM as well as Novell, AutoZone and DaimlerChrysler, major IT vendors continue to unveil Linux-based offerings, Unisys being the latest example [see story below]. Are there more lawsuits to come against additional Linux vendors or users? We came out and put our claims in front of the courts. We look forward to getting a resolution to those issues. When those issues are fully resolved, we'll go from there. We've got our hands full right now. From our perspective, we're fine to let the reservoir fill. Later on, we'll worry about the water flowing out the other side. We don't want to be spread too thinly by taking on the rest of the world [now]. It's a long-term game.

Isn't it possible, as some critics have suggested, that IBM could buy SCO in a settlement and close the company down? The

notion is that SCO loses either way — that IBM buys us, or we lose in court. We didn't go into this thing to try to go out of business. We're trying to reclaim the business that was improperly taken from us. A settlement to me would be to restore what was taken from us so that we can stay in business.

In June, SCO reported that Unix licensing revenue through its SCOSource division totaled just \$11,000 in the quarter that ended April 30 — a 99% drop-off from \$8.25 million in the same quarter last year. What happened there? In the day-to-day business, we have some speed bumps that come up from our [intellectual property] issues. In the previous quarter, we had several large licensing deals, but you can't repeat those every quarter. It's not really as brutal as people might expect. **Q 48606**

READ MORE ONLINE

In his keynote speech, McBride said that Unix isn't going away and that SCO remains a product company:

QuickLink 48571
www.computerworld.com

Unisys Offers Linux on High-End Intel Servers

BY PETER SAYER

Unisys Corp. is now supporting Linux on its ES7000 series high-end servers, the company announced last week.

Blue Bell, Pa.-based Unisys already offered Linux on two- or four-way servers based on Intel microprocessors and is now adding support for Linux on a range of multiprocessor machines containing up to 32 Intel 32- or 64-bit processors, it said.

Unisys will offer two distributions of Linux on its ES7000 servers: SUSE, from Novell Inc., and Red Hat, from Red Hat Inc. SUSE Linux will run on up to 32 processors, and Red Hat Linux on up to 16, according to Steve Rawsthorn, Unisys' vice president of sales

and marketing for systems and technology in Europe, the Middle East and Africa (EMEA). For support and service, Unisys will provide the main point of contact and handle first-line support, he said.

Rawsthorn stressed that Unisys is in no way turning its back on Microsoft Corp., supplier of the Windows operating systems that previously shipped on all ES7000 models.

"We see this as an incremental revenue opportunity for us with Linux. We don't see it detracting from what we do with Microsoft," Rawsthorn

said. The company was prevented from bidding for some contracts because it didn't support Linux, he said.

Unisys said some organizations are already running Linux on ES7000 machines, including Pennsylvania State University and the Florida Department of Children & Families. These early adopters had "very little" help from Unisys in doing so, Rawsthorn said.

One area where Linux may have a leg up on Microsoft's operating system is in its support for dynamic partitioning. If, for example, an ES7000 machine is running one application in an instance of Linux across 16 processors and another application in a different instance across another block of 16 processors, dynamic parti-

tioning allows processors to be taken away from one application and given to another as the workload changes and while the application continues to run.

ES7000 hardware has been ready for dynamic partitioning for years, but no operating system has been able to make use of it, according to Andy Carter, Unisys server product manager for EMEA. "You won't have that in Windows until Longhorn comes along," he said.

ES7000s with Linux are available now, Unisys said. Officials could not immediately provide pricing. The hardware will cost the same regardless of the operating system, Rawsthorn said, but the cost of the software licenses and service contracts will vary between the Windows and Linux versions. **Q 48628**

Sayer writes for the IDG News Service.



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EDS Plots to Avoid 'Problem Contracts'

Company moves to 'agile enterprise' business strategy

BY DAN VERTON

ELECTRONIC Data Systems Corp. has launched a major overhaul of its business strategy in an effort to remove the term *problem contracts* from its lexicon. But the firm's most important contract, the beleaguered, multi-billion-dollar Navy/Marine Corps Intranet (N/MCI), continues to be an anchor tied around the company's neck.

During Plano, Texas-based EDS's latest earnings conference call with analysts, on July 28, CEO Michael Jordan

announced an "agile enterprise" business strategy: a network-centric utility computing model based on "best-of-breed alliances."

However, the most critical aspect of the new strategy is a major revamp of EDS's entire services delivery structure, said Jordan. "This will result in significant consolidation of solution centers [and] data centers, and change the way we approach the application development business," he said. "This is how we're going to achieve the next \$3 billion in cost savings."

And that part of the company's strategy for economic revival may already be at work supporting the N/MCI contract, a \$6.9 billion deal award-

ed in 2000 that's now valued at \$8.8 billion as a result of a two-year extension.

After completing an internal review of N/MCI program management in January, the company put in place "very rigorous contract review processes" focusing closely on "our ability to deliver what we propose in the contract, which we did not do as well in earlier years," said Jordan.

SLA Changes

In addition, EDS recently announced a joint commitment with the Navy to implement commercial service-level agreements by Sept. 1. It is also about to sign a contract performance modification that will allow EDS to bill the

Navy for services it is performing but that aren't covered by the contract.

"We recognized the need to make the SLA process more reflective of commercial best practices," said Navy Capt. Chris Christopher, deputy director for future operations and business initiatives. He stressed that the SLAs are being refocused on efficiency and are not being adjusted so they're easier to achieve.

Christopher also confirmed plans to modify the N/MCI contract to add a range of application hosting services, including server management, network management, security services, storage services, and hardware and software support. He added that the change would also enable the Navy to order hosting services from standard packages rather than customizing them for every N/MCI user organization.

EDS has a lot riding on the changes. According to Robert Swan, EDS's chief financial of-

EDS Strategic Goals for 2004

IMPLEMENT new N/MCI contract service-level agreements by Sept. 1 enabling the company to bill seats at 100%.

COMPLETE agreements with major alliance partners to provide the technology backbone for its Agile Enterprise Platform.

REALIZE \$1 billion in annual cost improvements by year's end.

SIGN at least \$17.5 billion in total contract value for the full year.

ficer, the N/MCI deal "continues to be a drag" on the firm, with a \$12 million reported drop in revenue compared with last year due to a decision earlier this year not to defer construction costs related to the contract. In addition, Jordan acknowledged that continued "uncertainty" surrounding the deployment of N/MCI seats at the Navy's Bureau of Medicine and Surgery yielded a \$100 million negative cash flow setback this year.

Lorrie Scardino, an analyst who covers EDS and N/MCI at Gartner Inc. in Stamford, Conn., said the changes indicate that the company is moving in the right direction but that challenges remain ahead.

"I don't think that EDS is out of the woods yet by any stretch of the imagination," said Scardino. "The financial issues loom large. Any IT services provider, especially one the size of EDS, has to have stable financials," she said.

The termination last week of what the company called its "other commercial contract" — the troubled deal with The Dow Chemical Co., which EDS declined to identify by name during the July 28 earnings call — is another positive sign, said Scardino (see story, page 1). However, she said EDS faces an uphill battle, since IBM, which took over for EDS on the Dow contract, and Hewlett-Packard Co. are the leaders in the utility, or adaptive, computing market. **Q 48669**

IBM, Mayo Clinic Take Next Data Mining Step

DB2-based system contains records on 4.4M patients

BY BOB BREWIN

IBM and the Mayo Clinic last week said they are moving into the second phase of a technology partnership aimed at using a database of patient records to foster what Dr. Nina Schwenk, who heads Mayo's IT operations, calls the Holy Grail of medicine: individualized patient treatment.

IBM and the Mayo Foundation for Medical Education and Research, the formal name for the Rochester, Minn.-based nonprofit health care organization, announced that they were teaming up in early 2002 [QuickLink 28395]. After initially putting the medical records of about 4.4 million patients treated at Mayo's three clinics into a DB2 data-

base, IBM and Mayo have spent the past two years developing and testing a methodology for mining the data.

Now they want to analyze information about patients in new ways and compare individual medical records to data about other patients who have similar disease characteristics and genomic makeups, said Schwenk. IBM and Mayo hope to use the results to fine-tune treatments, she added.

For example, a doctor treating a patient for cancer could use the data mining system to discover the results of treatments given to the last 500 patients who had cancers that were located in the same spot and had identical genetic characteristics.

The individualized care made possible by such information could one day replace current blanket-treatment approaches based on standard

medical protocols, according to Schwenk. Instead of treating cancer patients with a common stew of chemotherapy, drugs could be tailored to fit specific cases, she said.

IBM plans to use its Blue Gene supercomputer on the project to do advanced molecular modeling for researching

diseases, said Drew Flaada, IBM's director of the partnership with Mayo. He added that Mayo researchers will use Blue Gene to do "deep computing and deep science," including mathematical modeling and a simulation of gene structures to help predict the behavior of diseases.

The Blue Gene system, which is located at an IBM facility in Rochester near Mayo's headquarters, has a theoretical computing capacity of 360 trillion floating-point operations per second. IBM and Mayo are doing development work on an IBM p650 Unix server that's owned by the clinic, and they use a higher-end p690 machine as the production system that stores the patient records in DB2. The servers are based on IBM's Power4 processors and run its AIX operating system.

Schwenk wouldn't disclose the investments being made by IBM and Mayo, but she said the amount of funding is "significant — a lot of zeros on both sides." **Q 48666**



THE MAYO CLINIC hopes to use data mining results to fine-tune medical treatments.

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The Power to Know.



Continued from page 1

Online Data

rages, floor plans of office suites, and contact names and phone numbers for the telecommunications service providers that serve the building.

Maria Gemske, a spokeswoman for the Chicago Board of Trade, said the exchange could not comment publicly about specific security precautions being put in place. But she stressed that "all aspects of security are taken very seriously and we are looking into [our Web content] as well."

But information like that posted on the exchange's Web site can be a gold mine for terrorists, security experts said. A senior intelligence official at the DHS, speaking on condition of anonymity, said the recent capture of al-Qaeda computer expert Muhammad Naeem Noor Khan in Pakistan yielded a computer filled with

photographs and floor diagrams of buildings in the U.S. that terrorists may have been planning to attack.

"Not thinking through the security implications of some of the information put online can be a very dangerous mistake," said Amit Yoran, director of the National Cyber Security Division at the DHS. "The Pentagon has looked very closely at this issue, and certainly corporate America should do the same." In fact, Yoran said the situation is serious enough that the DHS may need to look into publishing best-practices guidelines for companies to follow.

Unheeded Warnings

Eric Friedberg, managing director of New York-based security firm Stroz Friedberg LLC, said the warnings about sensitive Web site postings that his company took to the private sector two years ago have "fallen on deaf ears" [QuickLink 27059].

MacDonnell Ulsch, managing director of Janus Risk Management Inc. in Marlboro, Mass., said making this type of information available is inexcusable.

"It may make it easier for contractors and service providers to do their jobs, but the risk may exceed the benefit," said Ulsch. "A well-trained engineer can easily discern the greatest points of vulnerability in a building by analyzing the design. Making this information available is a fundamental mistake with deadly consequences."

According to Ulsch, what companies do or fail to do in response to a threat is a direct result of their understanding of the risk. Consequently, when companies are told to beware of terrorists driving truck bombs into or near their buildings, they deploy concrete barriers, he said.

And that seems to be exactly what has happened in the aftermath of the latest threat-

Not thinking through the security implications of some of the information put online can be a very dangerous mistake.

AMIT YORAN, DIRECTOR,
NATIONAL CYBER SECURITY
DIVISION OF THE DHS

level increase, with most firms focusing on redundancy and recovery while paying very little attention to countersurveillance and information control.

Sylvain Pendaries, CIO at CDC Ixis North America Inc. in Manhattan, said previous terror alerts have loosened the purse strings of executives in his company, enabling him to complete disaster recovery plans. CDC Ixis in February completed an upgrade to its

communications network, moving from two T3 lines to a Sonet ring that connects sites in New York and New Jersey at OC48 port speeds.

While an increased focus on disaster recovery is necessary, Yoran said the lack of focus on blocking cybersurveillance activities stems from a disconnect between the terrorist alert system and the role of cybersecurity in homeland defense. "In practical terms, tuning a firewall, changing parameters on antivirus software and advocating more frequent password changes don't really line up with the different threat levels," he said.

Michelle Petrovich, a spokeswoman for Robert Liscouski, assistant secretary for infrastructure protection at the DHS, said that while companies have the right to post whatever information they want, the DHS encourages all companies to add Web site reviews to their list of preventive security measures. **48662**

Continued from page 1

Dow

now: a VoIP network serving its 46,000 employees in 63 countries.

"It was really the pioneer days in 2001," said Jim Slaby, an analyst at The Yankee Group in Boston. Dow "is one of these unfortunate casualties of living out on the edge."

IBM officials said they don't know how much of the prior work will be useful. The company, in its discussions with Dow, focused on setting requirements and not on prior work. "We're not obligated by any previous architecture and design," said Todd Kirtley, general manager of the industrial sector at IBM Global Services.

All Kirtley would say about the prior work was that Dow "did not get the traction they were hoping to get."

IBM's seven-year outsourcing agreement, which it declined to value, covers operation of Dow's global IT infrastructure. That includes sup-

Déjà Vu

Statements by David Kepler,
vice president of e-business
and CIO, Dow Chemical:

JUNE 2001: "Our new technology solution allows employees to bring the connectivity of their offices on the road, as well as connect customers, employees and offices in a more efficient, powerful and global manner."

AUGUST 2004: "Working together, we will leverage information technology to increase productivity, streamline decision-making and connect more conveniently with our customers."

porting servers, desktops and e-mail; providing storage and network bandwidth under a utility pricing model; and building the converged network.

The odds may have been against Dow from the start. Analysts say it was just too far ahead of its time. In 2001, "people didn't understand all

the issues" involved in deploying a converged network, said Bob Hafner, an analyst at Gartner Inc. And some core technologies were unavailable. For instance, "we didn't have the tools to do network certification," Hafner said.

A third-party consultant who worked on the DowNET VoIP project, who spoke on condition of anonymity, said the project ran into delays because replacing legacy systems proved to be very difficult, and there were unanticipated problems. For instance, security systems that used analog technology didn't necessarily work on a VoIP network. "There was definitely a lot of poor planning," the consultant said.

Moving On

EDS, Dow and Cisco Systems Inc. — the main technology provider under the original contract — all declined requests for interviews to discuss the project.

How much was lost by any of those companies is difficult to determine. On July 28 EDS

said it had reached an agreement to terminate a commercial contract that it didn't identify and reported a \$135 million pretax termination-related charge.

But whatever problems EDS encountered with the Dow project, they apparently haven't affected its outsourcing deal with Bank of America Corp. Indeed, that relationship was recently expanded. EDS and Bank of America are building a converged network that appears to be bigger than Dow's, serving about 180,000 employees.

Last month, EDS signed a \$1.1 billion outsourcing deal with the bank, which is an addendum to a 2002 outsourcing agreement valued at \$4.5 billion that was intended to integrate FleetBoston's communications infrastructure with Bank of America's. Charlotte, N.C.-based Bank of America announced its merger agreement with FleetBoston last year.

Steven Venezia, managing director of the network computing group and network ser-

vices at Bank of America, said the bank is thoroughly planning and testing every aspect of the network project.

"I'm confident [because] nothing will forge ahead unless it's proven," said Venezia, noting that the bank has multiple pilots in progress. If all goes according to plan, the bank could have an initial rollout at selected locations next year.

Venezia said EDS has met 97% to 98% of the bank's service delivery requirements. **48668**

Clarification

In the story "Effort Afoot to Address E-voting at Convention" in our July 26 issue, we reported that Aldo Tesi, CEO of Election Systems & Software Inc., contributed \$1,200 through the Commercial Federal Bank political action committee. It should be noted that Tesi made the contribution in August 1999, prior to joining ES&S on Nov. 1 of that year.

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It's Time.

MARYFRAN JOHNSON

Roll Your Own Future

NOW HERE'S A REAL CLASSIC on the comeback trail: developing your own applications. Sounds so retro, doesn't it? The kind of thing start-ups do when the CEO doubles as the chief product engineer and surrounds himself with a cabal of MIT grads writing code. So what's going on when large pharmaceutical companies, insurers, hotel chains, health care providers and online pow-

erhouses like travel firm Orbitz are found, in this day and age, productively rolling their own?

Computerworld reporter Gary H. Anthes answered that question last week in his cover story about the many sensible, cost-saving and even surprising reasons why companies build their own applications rather than buying into more packaged software ["Roll Your Own," QuickLink 47884]. What he uncovered flies in the face of conventional wisdom that buying is better than building—a belief assiduously promoted by software vendors of all sizes.

And no wonder. The lifeblood of so many software companies increasingly flows directly from their maintenance and support fees, which have risen to nosebleed levels of 18% to 25% annually to offset the economic drag of lower sales in recent years.

Take Oracle as Exhibit A. When the database maker posted its financial results in mid-June, the single biggest factor cited as offsetting its slow-moving application sales was rapidly growing revenue from those fat fees for software maintenance. That revenue is increasing nearly twice as fast as new license revenue, CEO Larry Ellison said.

But it's not just the high cost of applications and their hefty annual fees that are driving development of homegrown applications. Ranking high as reasons for this approach are dissatisfaction with complacent ven-



MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at maryfran.johnson@computerworld.com.

dors that don't respond quickly enough to user needs, and dismay over software suites overloaded with features and fiendish complexity. At Reinsurance Group of America, for example, a \$35 million global enterprise administration system that was developed in-house not only fueled a competitive leap past the company's rivals but

also was vastly preferable to the nightmare alternative of integrating more than a half-dozen commercial packages to provide similar capabilities.

Yet the greatest reason of all to roll your own is the ability to tailor IT to your business, to control the fate of applications too vital to trust to outside developers. It's about en-

abling (may Nicholas Carr forgive us here) a competitive edge that really does matter.

At Reliant Pharmaceuticals, for example, CIO Ron Calderone wisely heeded user resistance to complicated sales force automation tools and built a relatively simple system using speech recognition technology for the field agents. A packaged SFA system would have cost \$4 million to \$6 million, Calderone reckoned, but he delivered just what his business comrades needed for about 15% of that.

"Simple and inexpensive" are often the magic words associated with the best in-house application projects. We're hearing that mantra more often these days, particularly as open-source software carves inroads at the enterprise level. As Orbitz CTO Chris Hjelm put it in our story, "We are largely an open-source shop, so when we think about buying software, there's a general aversion to it."

The "buy vs. build" debate will no doubt go on forever. But the combination of open-source software with sophisticated development tools and standardized Web services is dramatically changing the face of that argument. When companies go looking for technical creativity, innovation and a competitive edge, they won't be buying that off anybody's shelf but their own. **48620**

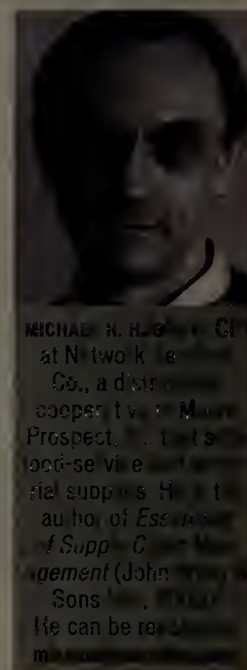
MICHAEL H. HUGOS The Systems Builder as Leader

IN MY COLUMN last month [QuickLink 47673], I defined *systems builder* as a person who is central to the success of any systems development project. This person possesses skills in two main areas: designing systems and leading projects to build systems. I then looked at the five basic skills needed for designing systems. This month, I'll discuss the six practices that are the basis for success in leading projects.

In my years of experience in developing systems and watching others do so, I have found these skills to be the essence of project leadership. The more accomplished the systems builder is in these areas, the higher the success rate.

1. Be an effective communicator and negotiator. The systems builder as designer collaborates with others to create a compelling system vision. The systems builder as leader communicates this vision in a way that attracts people and motivates them to act. This means clearly describing a system's features and benefits to a business and a technical audience and showing how development will progress from vision to reality. Systems builders may not all be great public speakers or have outgoing personalities, but they find ways to use the talents they do have to get the message across and win support.

2. Set high standards and great expectations. People want to participate in projects that they believe will improve their skills and bring them recognition and rewards. So the systems builder sets high standards for performance and helps people to attain them. The systems builder also paints a picture that highlights all the great things the proj-



MICHAEL H. HUGOS is CIO at Network Systems, a distributed systems consulting firm in Prospect Heights, Ill. He is a frequent speaker at industry conferences and author of *Essentials of Successful Project Management* (John Wiley & Sons).



ect will bring about. As Daniel Burnham, the great Chicago architect, said, "Make no small plans. They have no magic to stir men's blood."

3. Delegate, delegate, delegate. All well-defined projects have a set of objectives or milestones that must be reached in order to finish the project. The systems builder delegates the accomplishment of these objectives to the qualified people who have been attracted to the project. (If no qualified people have been attracted, then stop the project.) Along with delegating responsibility to achieve objectives, the systems builder also works to provide people with the resources they need to do their jobs. In this respect, the systems builder becomes the servant of the people working on the project.

4. Be available. Delegating work does not mean delegating ultimate responsibility for the project. Systems builders stay actively involved. They hold regular, weekly project meetings that are a forum for honest discussions about issues, and they have an open-minded approach to resolving the problems that arise. Systems builders learn that in most cases their people already have or can quickly come up with good answers to problems if they are able to discuss the situation and get the systems builder's thoughts to help them in their own thinking.

5. Be decisive. Key leadership decisions often involve the allocation of resources to achieve project objectives. When a development team runs into an obstacle that demands the reallocation of resources or the redefinition of an objective, the systems builder must get directly involved. The systems builder includes the appropriate people, does the best analysis within the time available, makes decisions and moves on. If the systems builder isn't willing to make the tough decisions when necessary, then no one else will either, and the project will lose momentum and start to drift.

6. Act with energy and focus. As a project progresses, constant effort is required to sell the project and its benefits. The systems builder constantly encourages, cajoles and assists people to keep up the pace of work needed to finish on time and on budget. Leaders lead by example. They lead from the front. The systems builder's presence and demeanor sets the tone for the whole project and is a large part of what keeps people motivated and focused on the work that needs to be done.

☎ 47672

THORNTON A. MAY

Telecom: Opportunity, Frustration

WHAT does telecommunications mean to you? For most C-level IT managers, it's the greatest source of short-to-intermediate-term cost reductions, the sector of greatest long-term strategic confusion, their self-acknowledged zone of greatest ignorance and the source of their biggest all-around tactical, day-to-day administrative frustration.

These are the conclusions of a survey and a series of interviews conducted at the most recent CIO Solutions Gallery at Ohio State University's Fisher College of Business.

A frenzy of contract renegotiations is delivering cost reductions that could make even the most frugal CFO almost feel guilty. Those pricing improvements, combined with a trend within companies of standardizing the equipment installed in their networks and consolidating their network services to fewer carriers, is

putting many telecom suppliers in a tough situation. As one CIO explained, "Prices are dropping all over the place. I am always re-evaluating my technology stack. I am always squeezing my providers. I am currently of the mind that short contracts are generally in your favor, and negotiating a contract midcontract is a good thing to do."

Meanwhile, a general rethinking of telecommunications is under way and contributing to the strategic confusion. Cable, wireless and fixed-line telephone carriers are rapidly entering one another's businesses. What previously were nondecisions are suddenly up for grabs. Who will provide services to us, and what will they supply? Phones have become much more than phones. Handsets take photos, access the Web, and send and receive e-mail. Some even serve as PDAs. More transition is inevitable, with the arrival of the potentially game-changing

technologies of wireless and VoIP. Where should wise IT leaders place their bets?

And then there's the ignorance and frustration that telecom causes. Designing, operating, engineering and troubleshooting very large IP-converged networks is growing more difficult, and the skills needed to do all that are becoming increasingly scarce. IT leaders are the first to admit that they

don't possess deep technical skills in the telecommunications area. At the CIO Conference in Pebble Beach, Calif., last month, I asked 140 executives (via an interactive electronic polling system) how they would describe their understanding of telecom: 28% said they had an "excellent" understanding, 53% said "average," and 19% said "poor."

But the responses were very different when I followed up with a more specific inquiry. When asked, "If your board of directors asked you to explain the line-item detail of your monthly telecommunications bill, would you be able to do so?" 29% said, "No worries; let's go have a beer," 32% said they were "a little worried," and 39% said they would be "in a world of hurt." One CTO summed it up this way: "There are no telecommunications vendors today that are doing a great job; they all need to be closely managed. Operational performance leaves much to be desired, and billing performance is even worse."

We are at a pivotal point in the management and deployment of telecommunication services. Future-focused IT leaders would be well advised to spend a little more time with the vendors in this area, do some homework and put together a plan for the future.

☎ 48556

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THORNTON A. MAY is a longtime industry observer, management consultant and commentator. Contact him at thorntonamay@aol.com.

READERS' LETTERS

Ask the Right Questions When Hiring

WHILE I certainly agree with Paul Glen's conclusions in his column "The Wrong Stuff" [Quick-Link 47608], I think there is a larger problem than the ones he covered. When we hire people, we ask the wrong questions. We act like game-show hosts, hiring people filled with technical trivia. We need to hire people who know how to use the information they have and find the information they don't. More importantly, we need people who understand that software development is multidisciplinary and who can do whatever it takes, even when the solution is far from programming.

David Douglass
Technologies consultant,
Bloomington, N.J.,
david_douglass@ieee.org

THE big questions to consider are: How can a firm hire good people if its screening process is run by people who don't know anything about the skills they are trying to screen? How can you hire good people if your HR screeners are too lazy to read the résumés?

Jerry Masters
Programmer/analyst,
Clinton, Miss.

AS someone who has been looking for work for the past three years, I can say that this is the first article I have read that exactly describes the silliness of the hiring process today. Faced with thousands of résumés, how can hiring managers scan them one by one and imagine the potential of every

candidate? They can't, so by setting up tight requirements, they hope that they will hear from only a few candidates.

A. Leung
Toronto

Customer Councils Help Govern IT

GREAT article on the IT governance process ["IT Governance Is on the Hot Seat," Quick-Link 48025], with sad statistics on those who are still holding out on formalizing their processes. Something your readers might want to consider is the customer council concept. Customer councils are created at the business unit or functional-area level and are like mini IT steering committees. They review the backlog, validate projects and

requests, prioritize and are even held accountable for pieces of the process like approval, budget and testing. My company has found much success with such councils.

Carol A. Fawcett
Vice president of IS,
Quest Software, Irvine, Calif.

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Controlling Content Chaos

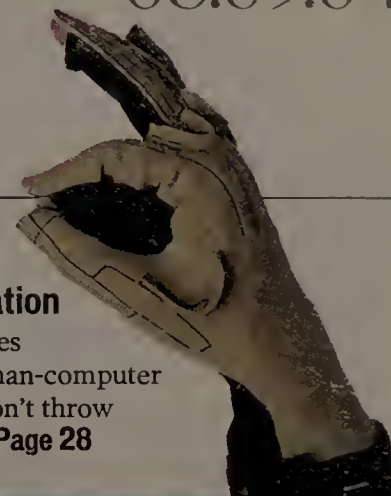
As documents and Web sites multiply at dizzying rates, companies are turning to content management software for help. **Page 25**

SECURITY MANAGER'S JOURNAL Merger Interrupts Sarb-Ox Project

An acquisition prompts a break for a last-minute security audit but fails to slow Sarbanes-Oxley compliance efforts at Mathias Thurman's company. **Page 30**

FUTURE WATCH User Interfaces: The Next Generation

A slew of emerging interface technologies promises to enable a wider range of human-computer interaction than is possible today. But don't throw away that mouse and keyboard just yet. **Page 28**



FIELD REPORT

IT WAS OBVIOUS AS 2002 drew to a close that Cigna Corp. would have to cut costs. Sales at the Philadelphia-based health insurance benefits company had risen for the year, to \$19 billion, but earnings had plunged from \$1 billion a year earlier to a loss of almost \$400 million.

For Cigna's IT organization, one area for savings stood out. The company had more than 3,000 servers and was bringing in new ones by the dozen, but server utilization was inefficient. "If you had a new application project, you got your own boxes, bought your own servers and put in your own software," says Cigna Chief Technology Officer Marcus Shipley. "Everything, all the way up the applications stack, was a one-off just for you, and boxes would run at 10% to 15% utilization."

The way to get more out of its servers, Cigna realized, was by virtualizing them — enabling a single server to run multiple operating systems, applications or versions of an application — and by enabling dynamic load balancing of those applications across server farms. Cigna hoped virtualization would reduce the number of its file-and-print, database, application and Web servers by 25%.

But the company's multifaceted virtualization program became much more than a simple server consolidation project. It included aggressive operating system upgrades; moves to new hardware, including 64-bit processors, blade servers and storage-area networks; and, most important, adoption of nascent virtualization software from IBM and Microsoft Corp. "It's based on the 'on-demand' concept of IBM, or concepts of grid computing," says Benjamin Flock, Cigna's vice president for application frameworks and virtualization. "It's the



CTO MARCUS SHIPLEY says Cigna aims to address both infrastructure efficiency and business solution effectiveness in its virtualization program.

GIORGIO PALMISANO

Cigna GOES VIRTUAL

The insurer's cutting-edge virtual server deployment is on track to cut server operating costs by 25%. **By Gary H. Anthes**

separation of the application and the hosting service. So I've got an application, and as long as I have a service level defined and I manage that service level, it should be transparent where it runs." Flock says Cigna is on track to reach the goal of a 25% reduction in server operating expenses by year's end, and he expects additional savings in subsequent years.

Insurance companies aren't known for pushing the edge of the IT envelope, and until 2003 Cigna was no exception. Then the pressure to cut costs and the tremendous promise of several emerging technologies propelled the company into beta, alpha and even prealpha pilot projects with IBM, Microsoft and Intel Corp. "We tend to be on the trailing side, but now, with these activities, we've been on the leading edge," Flock says.

Microsoft Migration

In 2002, Cigna's systems built around Microsoft products were "in disarray," says Chris Cox, an enterprise architect. "We had two versions of Visual Basic that people were developing with, different versions of data access components, different versions of database technologies. Since everybody had their own machines, they just used what they were accustomed to using. And the production environment had every possible combination."

So early last year, Cigna kicked off an aggressive migration to Microsoft Windows Server 2003. That project began even before the final version of the operating system was released. Cigna signed on to Microsoft's Rapid Adoption Program and in the process reduced its internal server certification time from 12 months to just 90 days.

Windows Server 2003 brings application partitioning and isolation capabilities to the .Net Framework development and management tools, allowing Cigna to run several similar applications concurrently on a single server. Its COM+ feature isolates versions of a component so they can run simultaneously on one server, and it allows Cigna to install multiple applications or versions on the same server without having to upgrade each one and then test it for the new environment. It also enables Web application "pooling," via Internet Information Services 6, for running multiple Web applications independently.

Earlier, six or more servers might be dedicated to a small application — one each for development, unit testing, system testing, end-user acceptance testing, preproduction and production. With partitioning, many of those functions can be performed on a single server. "Our entire server environment will be built out to Windows Server 2003 by the end of the year. That's a big deal," Flock says.

In a second major thrust, early this year Cigna joined Microsoft's Joint Development Program for Virtual Server 2005. That product takes a software approach to partitioning that, with Windows Server 2003, will let Cigna run multiple instances of the operating system simultaneously on one machine. "It allows us to split the hardware into logical partitions like we do on the mainframe," explains Larry Brandolph, enterprise technical architect at Cigna. "You get a base OS, then Virtual Server on top of that, and three, four or five 'guest machines' on top of that."

Cigna is testing a beta version of Virtual Server

Cigna's Server Virtualization Project

OBJECTIVE: Use virtualization technology to increase efficiency and reduce pool of 3,000 servers, running at just 10% utilization, by 25%.

CHALLENGES: Required executing multiple hardware and software projects in parallel and pioneering the use of new software in production systems.

PAYOFF: Lower cost from better server utilization, faster certification of new products and systems, and greater standardization of IT across the company.

2005 and is using an alpha version of the Virtual Server Migration Toolkit to migrate its applications to virtual machines. Microsoft says it will ship both products later this year.

Extending WebSphere

In parallel with its Microsoft migration, Cigna began an aggressive move from IBM's WebSphere Application Server 3 to Version 5. "We decided to go direct to Version 5 because of its clustering and centralized deployment and its better isolation and management of applications in a shared services model," Flock explains.

And early last year, Cigna began working with IBM in its High Performance On Demand Solutions lab to help define requirements for software code-named Cayuga. Now a beta product called WebSphere Extended Deployment (XD), it can partition jobs across multiple processors, databases and application servers.

Cigna is now using XD in a proof-of-concept test. The company hopes it will provide utilitylike compute cycles on demand so that every server doesn't have to be configured to handle peak loads.

As head of systems testing and quality control, Gerald McDonald is instrumental in proving out the new virtualization concepts at Cigna. But as the owner of 900 servers, he also wears a user hat. Some 300 of his Windows 2000 and Windows NT servers would have to be replaced in the coming year at a "refresh" cost of almost \$9 million, he says. Now, with better utilization of his 600 other servers, he will have to buy far fewer replacements. "Up until the virtualization, we've never had any alternative but to replace those machines," McDonald says.

The Next Big Thing

Now on track to meet its server consolidation goals, Cigna is laying plans for the next big phase, in which it will augment the shared services capabilities in WebSphere 5, Windows Server 2003 and Virtual Server 2005 with new technologies for dynamic provisioning and on-demand computing. Cigna is looking hard at IBM's Tivoli Intelligent Orchestrator (TIO) and Microsoft's Dynamic Systems Initiative (DSI), both of which promise to "virtualize the data center," as Flock puts it. The idea is to make all servers available to all applications, with excess ca-

capacity anywhere acting as a buffer against unexpected demand peaks.

TIO, for example, would sit on top of all Cigna systems — mainframe, midrange and distributed, both IBM and non-IBM — spanning multiple boxes and subsystems. It would monitor the efficiency of the network and constantly balance the workload by sending peak workloads to underused hardware and software.

As for DSI, "Microsoft has not evolved that into a product strategy yet, but since we have worked very closely with Microsoft and done a lot of work applying Virtual Server, Windows Server 2003 and .Net technology to build out shared capabilities, we'll probably be one of the early adopters in that space," Flock says.

Corey Ferengul, an analyst at Meta Group Inc. in Stamford, Conn., says Cigna is a virtualization pioneer. "Most organizations in the next three to five years will be using virtualization in some major part of their organization," he says. "Most are deploying it in test and QA environments, and it's just beginning to make its way into production environments."

But there are risks for early adopters. "The biggest fear is that as you layer on different virtualization technologies, there are no clear interfaces between them. Management of the physical layer is pretty much figured out, but the virtual layer is still black magic," says Ferengul. "They need to think very carefully about how to do root-cause analysis, change management and so on."

Cigna's Shipley says IT initiatives usually focus on either "infrastructure efficiency" or "business solution effectiveness," but not both. Cigna is trying to address both objectives at once in its virtualization program, he says. Vendors like IBM and Microsoft are helping by integrating their application development and system management offerings, he adds.

Still, Shipley says he worries about his ability to integrate systems management software, such as the tools from IBM Tivoli, with software in the WebSphere and .Net application suites. "I know when a server is down, and I can have an engineer respond to that," he says. "But that engineer doesn't know that the server is part of your most critical business process. If I can instrument the business process, and I know that claims processing is down, now I can make a real good decision. You've got to move beyond just instrumenting the box."

Cigna's new software can do that, and Shipley is likely to get more help from XD and TIO. XD can give processing priority to WebSphere applications based on their designated importance or the priority of classes of users. And TIO can do the same things across all applications in the enterprise.

Shipley offers this advice to someone embarking on a big virtualization project: "Look for integrated product offerings, look for good vendor partnerships, and don't be bashful about giving them your requirements. Definitely don't try to roll it yourself." **Q 48172**

MORE ON THIS ONLINE

The Future of Virtualization: Experts at Microsoft and IBM explain what virtualization technology has to offer. **QuickLink 48189**

Thanks for the Memory: Cigna hopes to consolidate a SQL server by leveraging 64-bit memory capabilities. **QuickLink 48193**
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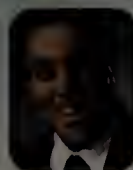
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Professor, Stanford University



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MONDAY, SEPTEMBER 27

10:00am to 9:00pm Registration Open

Afternoon

ANALYST TRACK 1:00pm to 5:00pm

1:00pm to 1:45pm



Process-Centric Business Intelligence Will Improve IT and Business Performance

Keith Gile, Senior Analyst, Forrester Research

1:45pm to 2:30pm



Dan Vesset, Research Director, Data Warehousing and Information Access, IDC

2:45pm to 3:30pm



Measuring IT's Performance

Richard Sneider, Partner, InterUnity Group

7:00pm to 9:00pm

Welcome Reception

IT END-USER GOLF OUTING noon to 5:00pm

The Pre-Conference Golf Outing at The Palm Course, located at the JW Marriott Desert Springs Resort, is complimentary (\$110 value) for registered IT End-Users. (Other participants, including sponsors and vendors, may play on an "as available" basis and are responsible for all applicable golf outing expenses.)



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TUESDAY, SEPTEMBER 28

7:00am to 8:00am Breakfast

8:15am to 9:00am



Opening Keynote Presentation: People and Data: Understanding Customer's Behavior

Andreas Weigend, former Chief Scientist, Amazon.com, and Professor, Stanford University

9:00am to 9:30am



End-User Case Study: BI Is Not OLTP - If There Was a Training Program for BI (But There's Not), 10 Things You Need To Know

Joshua Crandall, Vice President, Information Technology, Morgan Stanley

9:30am to 10:00am



Industry Leader Presentation: Get Maximum Payback Through Your BI Infrastructure

Keith Collins, SVP and CTO, SAS and
Irving Tyler, VP and CIO, Quaker Chemical

10:15am to 11:00am



Industry Leader Presentation

Dean Hager, Chief Product Officer, Lawson Software

10:45am to 11:30am



Panel: Business Intelligence Best Practices: Lessons Learned From Implementation

Panel Moderator: Julia King, National Correspondent, Computerworld
Panelists: Shirley Hughes, Chief Financial Officer and GM, Administrative Services, City of Falls Church (Virginia); Andy George, SVP, Information Technology, Profitline; Jon Farrar, Vice President, Predictive Modeling Department, Union Bank of California; Barbara Kindel, Vice President, IS Solution Engineering, Calpine Corporation

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11:30am to 12:00pm

12:10pm to 1:30pm

1:30pm - 2:00pm

2:00pm - 2:30pm

2:30pm - 3:00pm

3:00pm - 3:30pm

3:45pm - 4:15pm

4:15pm - 4:45pm

4:45pm - 5:15pm

5:30pm - 8:30pm

CONCURRENT END-USER PRESENTATIONS

Luncheon



End-User Case Study: Driving Excellence into Business Intelligence

Greg McMillan, Enterprise Business Intelligence and Data Warehousing Manager, Ford Motor Company



End-User Case Study

Mike Harte, CIO, PFPC

Industry Leader Presentation



End-User Case Study: The Role of Enterprise Architecture in Driving Business Intelligence Initiatives

Nida Davis, Senior Enterprise Architect, Federal Reserve System (FRS)



End-User Case Study: Optimizing Mortgage Operations and Creating a Competitive Advantage

Matt Slonaker, Director of Enterprise Business Intelligence, H&R Block/Option One Mortgage

Industry Leader Presentation



End-User Case Study

Dr. Jan Rowland, PhD, Vice President, Sales & Marketing Analytics, Dun & Bradstreet

Expo with Dinner

WEDNESDAY, SEPTEMBER 29

7:00am to 8:00am

Breakfast

7:15am - 8:00am



Breakfast Session: TCO Starts With The End-User

Ralph Kimball, Founder, Kimball Group

8:15am - 9:00am



Opening End-User Case Study

Steve Bandrowczak, SVP & CIO, DHL Express

9:00am - 9:30am



End-User Case Study

Cecilia Claudio, former EVP & CIO, Zurich Financial Services, and Executive in Residence, Clearstone Venture Partners

9:30am - 10:00am



Industry Leader Presentation

Rob Ashe, President and CEO, Cognos

10:15am - 11:00am



Panel Discussion

Panel Moderator: Dan Vesset, Research Director, Data Warehousing and Information Access, IDC

11:00am to 12:10pm

CONCURRENT END-USER PRESENTATIONS

12:15pm - 1:45pm

Expo with Lunch

1:45pm - 2:15pm



End-User Case Study: Driving Business Intelligence for Risk Management, Ongoing Quality and Process Improvement

Joe Schmadel, Senior Director of Business Technology, Pfizer, Inc.

2:15pm - 2:45pm



End-User Case Study

Cora Carmody, CIO, SAIC

2:45pm - 3:15pm

Industry Leader Presentation

3:30pm - 4:00pm



End-User Case Study: Analytical Information Processes as Drivers of Business Intelligence Strategy and Architecture

Ralph Martino, Information Warehouse Manager, JP Morgan Chase Credit Card Services

4:00pm - 4:30pm



End-User Case Study

Jim Pathman, CIO, Accredited Home Lenders

4:30pm - 5:15pm



CTO Insights Panel: BI Implementation: Truth and Consequences

Panel Moderator: Thornton May, Futurist and Computerworld Columnist

Panelists: Dave Henry, VP of Business Applications, Zions, Inc.; Keith Bearden, former VP of Information, A-dec; Nauman Sheikh, Enterprise Architect, Metavante Corporation

6:00pm - 8:00pm

Gala Evening

HEAR FROM EXPERTS AND VISIONARIES



Andreas S. Weigend,
Ph.D.

- former Chief Scientist, Amazon.com
- Professor of Statistics, Data Mining and Electronic Business, Stanford University



Steve Bandrowczak

- SVP and CIO, DHL Express



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In 1995, THE AMERICAN HOSPITAL ASSOCIATION launched a Web site — its first ever — for one of its publications. It proved so popular that another department at the AHA decided to put up a site too. Soon others also wanted to be on the Internet, and five years later, there were a staggering 72 AHA-affiliated Web sites, all running on different hardware and software, all managed by different departments and organizations, and all totally incapable of sharing content with the others.

It was, in short, Web content chaos, a situation that Herman Baumann, the Chicago-based organization's executive director for strategic development, says "was not sustainable from a business perspective."

The solution, it turned out, was a content management system, which the AHA purchased from Interwoven Inc. in Sunnyvale, Calif., in 2002. The product, called TeamSite, has enabled the AHA to consolidate the content from all 72 Web sites into a single Oracle database, thus reducing maintenance costs while still permitting individual webmasters to manage their own content.

Enterprise content management (ECM) software is designed to keep track of documents and records that are stored in a variety of locations and formats (paper, Web pages, PDF files and, increasingly, audio and video media) throughout a company. Interest in ECM systems has intensified as IT managers feel increased pressure both from their own executives and from regulatory agencies to carefully track and consolidate all of the organization's key documents.

For the AHA, not only did the implementation of a content management system help to centralize diverse stores of information, but it has also vastly increased the content available to all AHA organizations. Now each group can contribute content to the public database, and the others may opt to "subscribe" to that content and have it posted automatically to their sites.

"Our operating efficiency [for the sites] has more than tripled," says Baumann.

Jerry Valentine was looking for the same sort of advice when he began considering a content management package for his company, Grange Mutual Casualty Co., a \$1 billion vendor of property and casualty insurance in Columbus, Ohio. The company needed a system that could help centralize the disparate types of content used in insurance applications and claims — content that ranged from paper forms to photographs to audio tapes, says Valentine, Grange's project manager for imaging.

"For instance, we get 35,000 bodily injury claims each month, and for each, we take audio statements



ANDY GOODWIN

HERMAN BAUMANN says a content management system more than tripled the operating efficiency of the AHA's Web sites.

CONTROLLING CONTENT CHAOS

With documents and Web sites multiplying at unprecedented rates and regulatory pressures increasing, companies are looking for help from content management software. **By Sue Hildreth**

SHOPPING CHECKLIST

Find a content management system that can handle all your content, not just documents. Look for a system that can handle all your content, not just documents.

Look for vendors that have road maps following the trend of integrating document management, Web content management, records management, workflow, collaboration and digital asset management.

Require ECM vendors to also show a strategy and timeline for integrating individual products into the flagship architecture.

Look for ECM products that "rationalize" functions — meaning they use one repository, one user interface, one security system and so on.

Be careful of vendors that pitch new functionality offered via partnerships, rather than owning the technology themselves.

from both sides. These were stored on cassette tapes in a warehouse. If the case went to court, somebody had to go find the tapes, transcribe them, then put them back," explains Valentine, noting that other departments kept documents on microfiche and microfilm, as well as in good old-fashioned filing cabinets.

Valentine evaluated several products in terms of imaging, workflow, and document and records management capabilities. Grange ultimately purchased the IBM Content Manager application, with an IBM DB2 database, and Input Accel from Captiva Software Corp. in San Diego for scanning documents.

Now audio statements, along with documents such as claims forms and insurance applications, are stored in Content Manager. The system is consolidated in a single data warehouse, with 22 cache servers located at branch offices so that large or frequently used files don't have to go back and forth across the network.

The Emergence of ECM

ECM systems like those selected by the AHA and Grange Mutual combine a variety of niche content management products: those that manage Web content, records, documents, digital assets and images, plus collaboration tools. ECM software aims to provide organizations with a single platform for in-putting, storing, searching, editing, tracking, sharing and distributing all forms of content.

ECM has also gotten a boost from recent government regulations such as the Health Insurance Portability and Accountability Act (HIPAA), the USA Patriot Act, the Sarbanes-Oxley Act and a flurry of other less-well-known regulations in individual industries.

These regulations include requirements that organizations store documents for specified periods of time; make them available in portable, digital formats; and,

in some cases, track employee e-mails that relate to "hot button" legal issues such as Securities and Exchange Commission requirements or employee discrimination. Keeping up with the myriad regulations has driven increasing numbers of IT managers to purchase content management software, which can help automate compliance.

All of this helped push sales of ECM applications — which typically start at \$200,000 for an enterprise license — to \$2.656 billion last year, with \$3.175 billion projected for 2005, according to Joshua Duhl, an analyst at IDC in Framingham, Mass.

Integration Is Essential

What do you need from an ECM system? For starters, integration is important, not only between content management components, but also between databases and other applications. Also, if you plan to use a portal other than the ECM vendor's, "make sure your ECM vendor has a relationship with your portal vendor," advises Robert Markham, an analyst at Forrester Research Inc. in Cambridge, Mass.

When the Houston Independent School District (HISD) evaluated ECM products in early 2002, it looked for one that supported Microsoft Corp.'s SQL Server database and provided adapters to Microsoft Exchange, SAP and PeopleSoft. That's because the HISD wanted to create a portal to give employees access to e-mail, payroll and benefits information and

BEST OF BREED vs. SUITES

Bechtel Group has relied on the Documentum content management platform for the past decade to manage its huge collection of blueprints, material specifications and operating manuals stored in repositories around the world.

So when the company needed to add digital asset management and records management capabilities, Bechtel manager Darrell Delahousaye looked first to Documentum. "We wanted something that would plug in fairly transparently into our existing ECM environment," says Delahousaye.

The same can be said for Britannia Airways Ltd. in London, which bought Open Text's LivLink to streamline documentation used by pilots and crew members. Britannia wanted some basic workflow and document management capabilities, with out-of-the-box integration of all functions. "We wanted something that would integrate as a single package. We knew that meant we might not get best-of-breed class in all functions, but it would save us doing the integration ourselves," explains John Gough, programs manager at Britannia.

However, while platforms offer the comfort and convenience of being able to pick all your content management capabilities from the same vendor and, theoretically, integrate them into the existing system with minimal fuss, there are a couple of potential drawbacks.

One, says Robert Markham, an analyst at Forrester Research, is that not all of these products actually work well together; many have been acquired and therefore have a different code base and repository. It takes time for a new acquisition to be integrated into a vendor's platform.

Second, you may be missing out on some great capabilities from a best-of-breed product in a niche market. Paul Szegomai, president of systems integrator Integrated Document Technologies Inc. in Norwalk, Ill., says he believes companies often do better buying best of breed rather than a suite. "Putting all your eggs into one basket is risky. I have concerns about any vendor that claims they can do it all, because I haven't seen that," he says.

But if you need out-of-the-box integration among the components or prefer to deal with a single vendor for all content management needs, then a suite may be your best bet.

— Sue Hildreth

to allow students to view grade and attendance data, with all of it residing on back-end applications.

Finding support for PeopleSoft and SAP was easy, but support for SQL Server was less common, says Mark Hill, interim manager of applications for the HISD and a vice president at consulting firm Trendec. "Oracle would've been easier," he says. "It seemed [SQL Server] was a challenge for some of the vendors." The HISD ultimately selected Vignette Corp.'s Vignette v6 product and Enterprise Application Portal.

Find the Right Fit

ECM products offer a range of functions, and users need to match the available features to their needs.

The first step is to determine the functionality you need — records management, document management, digital asset management, e-mail management, collaboration or something else. Also consider verti-

cal-industry expertise. Many products offer capabilities tailored to specific industries and their unique regulatory requirements. Documentum in Pleasanton, Calif., for example, has versions for the health care, financial services, retail and manufacturing industries. Stellent Inc. in Eden Prairie, Minn., offers versions of its software specifically for the insurance, real estate, media and entertainment sectors. Open Text Corp. in Waterloo, Ontario, also has several products for vertical industries, including the automotive, education, energy and telecommunications fields.

Documentum's certification by the U.S. Department of Defense for complying with the 5015.2 standard for records management was important to Bechtel Group Inc., a global engineering firm based in San Francisco. The 5015.2 standard sets functional requirements for records management systems used by government agencies and private companies that do business with the government. For instance, it defines the required system interfaces and search criteria and the minimum records management requirements. For an individual organization to attempt to implement the requirements itself would involve a tremendous amount of work. "Documentum's being on the list of 5015-certified applications means we don't have to worry about it," says Darrell Delahousaye, engineering procurement and construction systems portfolio manager at Bechtel.

Likewise, finding a package that would aid compliance with HIPAA was important to the Surgical Planning Laboratory at Brigham and Women's Hospital in Boston. The lab first considered open-source options, such as Zope, but instead opted for a commercial product from Xythos Software Inc. in San Francisco, which offered the sort of security controls — such as levels of authorization and logging to track who's accessing which files — that HIPAA requires.

"Xythos has a ticket mechanism, so you can allow someone without an account to have limited access to files," says Michael Halle, director of technology development at the lab. Also, because the lab's researchers need to share documents with colleagues inside the hospital and around the world, it needed a product that supported standard technologies — such as a Java application programming interface and the WebDAV network file management protocol.

The AHA's Baumann mostly needed a system that could expand with the organization's needs and had a wide range of features, such as collaboration tools and support for audio clips. Because, as its earlier explosion of Web sites had shown, its members were hungry for new technologies to help them share information. "We knew we were going to grow into new areas, but we didn't know what those areas might be, so we wanted everything to be highly configurable and flexible," says Baumann. "We looked at [the Interwoven ECM system] as something that would go wherever we needed to take it." **48330**

Hildreth is a Waltham, Mass.-based freelance journalist. She can be reached at Sue.Hildreth@comcast.net.

ECM RESOURCES

Visit our Web site for a list of vendors that have enterprise content management offerings and the products they sell:

 **QuickLink 48340**
www.computerworld.com

\$3.175B

Projected sales of
ECM applications
for 2005,
according to IDC

Timely Tech Titles

They're not typical summer reading, but these books will provide useful information on the job. **By Tommy Peterson**

BOOK REVIEWS

We occasionally take brief note of books on technology that seem particularly useful because of the timeliness of their subjects and/or the quality of the information presented. These three titles offer comprehensive yet reasonably concise treatments of their topics.

Enterprise Service Bus, by David Chappell (O'Reilly Media Inc., 2004; 247 pages, paperback, \$39.95). Chappell has managed to capture many of the virtues of both a primer and a practical handbook for working professionals in *Enterprise Service Bus*. The author provides a foundation-level introduction to ESB technology, including plenty of context about the nascent ESB market and the state of enterprise application integration in general. Key terms and concepts are highlighted in boxes with headings like "What Are 'Standards,' Exactly?" and "To J2EE, or .Net to Be."

The book also provides enough granular detail, practical advice and case studies to make it worth the time of IT professionals who are already familiar with ESB technology. And for all segments of the audience, Chappell and his editors have done a splendid job in presenting remarkably straightforward and useful diagrams. Readers would be hard-pressed to find a more lucid or helpful book on a technology topic.

Securing Web Services With WS-Security, by Jothy Rosenberg and David Remy (Sams Publishing, 2004; 378 pages, paperback, \$39.99). Though this book opens with the assertion that Web services are a "transformational" technology for integrating information, do not fear, gentle reader. Rosenberg and Remy go beyond the hype and live up to their subtitle, "Demystifying WS-Security, WS-Policy, SAML, XML Signature, and XML Encryption."

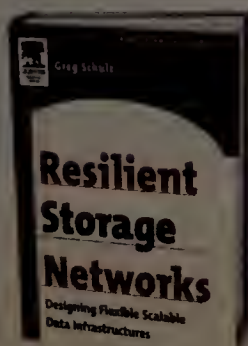
Securing Web Services With WS-Security breezes through a few basics, but its target audience is readers who are already immersed in the technology — Web



services developers and security administrators, along with some CIOs and CTOs. With users and analysts reporting that security concerns are the biggest barrier to the adoption of Web services by large companies, Rothenberg and Remy have worked to defuse a hot topic. Their approach is practical and methodical, going step by step through complex topics like combining XML encryption with the use of XML signatures. The authors also recognize that IT initiatives can rarely be undertaken in one big gulp, and they suggest incremental strategies for ratcheting up Web services security.

Resilient Storage Networks, by Greg Schulz (Elsevier Digital Press, 2004; 441 pages, paperback, \$49.95). Even considering that it's almost 450 pages long, *Resilient Storage Networks* covers an extraordinary amount of ground in surprising detail. Schulz first considers the importance of data availability and then marches through descriptions and assessments of all the major networked storage technologies. After taking a look at storage management tools and security strategies, he concludes with chapters describing the issues involved in creating various sizes and types of storage networks, along with detailed design recommendations.

Schulz presents information in digestible pieces, relying heavily on bulleted lists, short sections within chapters and diagrams that match those in Chappell's book for clarity and cogency. Especially useful are the lists of questions for infrastructure architects or storage managers to ask themselves as they embark on particular projects.



This book is aimed mostly at infrastructure architects and managers, but it's good reading for anyone who wants to learn more about storage technologies. **48532**

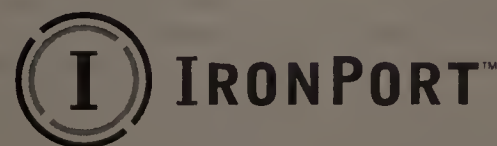
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User Interfaces

THE NEXT GENERATION

Keyboards and mice will face competition from motion-sensing, gesture recognition and haptic technologies. **BY JAIKUMAR VIJAYAN**

PDAs and smart phones are great for keeping the road warrior connected to the extended enterprise, but the technologies have always offered only limited data input capabilities, especially for typing-intensive applications.

San Jose-based Canesta Inc. thinks it may have just the thing to address the problem.

The company has developed a prototype technology that lets users of PDAs and similar mobile devices put data into their handheld systems by simply typing on an image of a standard-size keyboard projected onto a desktop or other surface. The "electronic perception" technology captures the user's finger motions via emitted light photons that form 3-D real-time images that are then processed and translated into keystrokes.

The technology can be integrated into any handheld device and includes a 3-D sensor module, a keyboard-pattern projector and an infrared light source.

Canesta has much more in mind. "Any situation in which a machine or a digital device needs to understand its surroundings is a great applica-

tion for electronic perception technology," says Jim Spare, a vice president at the company. For example, he says, a future application could be an intelligent car-airbag system that can sense the size and position of an occupant to prevent injury upon deployment.

And Spare says his projection keyboard heralds the way to much more powerful user interfaces that are based on hand gestures. "We'll be able to navigate through databases, especially when you have dif-

ferent sets of data with complex relationships," he says. "You could open up a filing cabinet and pick up a file and sift through it with

your fingers, using gestures from your hands as if you were actually picking it out of the file cabinet."

Canesta's technology is part of a growing list of emerging user-interface technologies that are being designed to enable a wider range of human-computer interaction than is possible with traditional mouse- and keyboard-based systems.

Broadly speaking, such technologies are designed to allow computers to accept gestures, motions, speech and facial expressions as data in-

put methods along with the mouse clicks and keystrokes.

Many of these technologies are coming from small companies and are first developed for highly specialized applications. But as the technology matures and costs come down, expect to see it break into broader markets, vendors say.

One example is a gesture recognition system developed for the U.S. Department of Defense by Cybernet Systems Corp. in Ann Arbor, Mich. The technology was developed to facilitate silent troop communication during combat. It allows users to stand in front of a camera-mounted monitor and manipulate images, data and application windows by using specific hand movements from a lexicon of roughly 80 gestures recognized by the system. A San Antonio-based TV station is using a commercial version of the product, called GestureStorm, to control computerized visual effects in its weather reports.

In the future, the technology could be used to enable many new applications, says Charles Cohen, Cybernet's CEO. A drive-up ATM where users could carry out transactions with simple hand gestures instead of leaning out of windows and physically touching buttons is one example, he says. Gesture recognition could be used to control appliances at home — for instance, a TV could turn off automatically if it sensed the viewer in front of it was asleep.

"This technology is not about replacing the keyboard and the mouse but to supplement them," Cohen says. "In 20 years, gesture technologies will be as common as the mouse."

San Jose-based Immersion Corp. makes medical simulators that give users tactile feedback while they're doing surgical simulations. Its LapSim simulator re-creates not just the sights and sounds of the procedure but also how a surgical instrument actually feels in the hands of the surgeon performing the surgery.

"You have many very realistic simulators that don't provide any feedback on how to

IN THE LABS

■ Researchers at MIT are working on a human-computer interface that allows users to interact with computers via eye blinks. The system is designed for use by severely disabled people.

■ A research project at IBM called Shorthand-Aided Rapid Keyboarding, Shark, uses pattern-recognition technology to enable users to do speed writing on special stylus keyboards.

■ Everywhere Displays project is another IBM effort aimed at developing systems that allow users to interact with computers using projected touch-screen images.

cut through soft or hard tissue or what needles might feel like when you are pushing it through skin," says Dean Chang, chief technology officer at Immersion.

Over the next few years, expect to see such tactile feedback, or "haptic," technologies find applications in other areas as well, Chang says. For example, cell phones could generate different vibration signatures to tell users who was calling or if the batteries were low.

Haptics could also enable all-in-one medical simulators that would allow doctors to do incredibly realistic, patient-specific rehearsals of complex surgical procedures before performing them, he says.

Automobile dashboards present another future opportunity for haptics, Chang says.

Touch screens that generate tactile feedback when images of buttons are depressed could allow users to control entertainment and climate systems more efficiently than they can with today's knobs and buttons, he says.

But getting there will take some doing, the vendors acknowledge. In a few cases, the base capabilities already exist but lack of investor interest is holding back further development. "If someone is prepared to give me the funding, I can deliver some of these things in a year's time," Cohen says. Immersion has licensed its haptics technology to a major cell phone manufacturer but expects it will take at least five years before the technology is broadly integrated into the company's products.

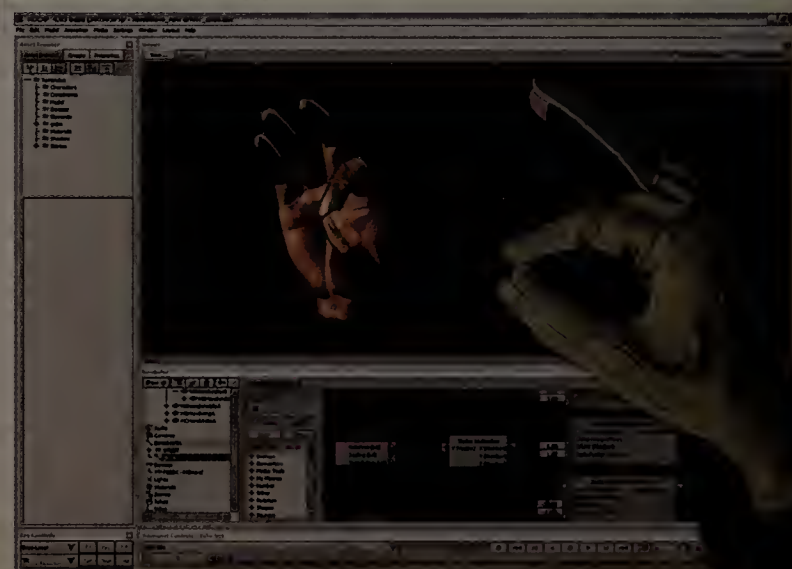
In other cases, the technology needs to mature, Cohen says. For gesture-recognition ATMs to become a reality, more work needs to go into making systems that can work well in outdoor environments with highly cluttered backgrounds. Similarly, Chang says, imaging technologies have to mature a great deal more before the ultrarealistic medical simulator can become a reality. **Q 48484**

TRASH TALK

Can you soon ditch your QWERTY keyboard? Find out online:

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FUTURE WATCH



A filmmaker uses Immersion's hand-sensing glove to capture motion and then edit and blend the animation. The CyberGlove uses 22 resistive bend sensors that measure finger and hand position, and VirtualHand software translates sensor data into a real-time model.

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Multiple submissions of case studies describing different deployments per company/organization will be considered. Ten IT end-user award winners will be honored at Computerworld's Business Intelligence Perspectives Conference, September 27-29, 2004, at the JW Marriott Desert Springs Resort in Palm Desert, California, with two awards presented in each of the five categories. An honorable mention will also be recognized in each category. Winners will be recognized on the event website, in an event press release and will be featured in a special magazine-sized supplement to Computerworld.

Submit your nomination online!

You'll find the nomination form and learn more about Business Intelligence Perspectives at: www.biperspectives.com

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Merger Interrupts Sarb-Ox Project

A last-minute security audit for a sudden acquisition briefly puts a major push toward Sarbanes-Oxley compliance on hold.

By Mathias Thurman

THE FIRST E-MAIL I got this week was a meeting invite with the subject line "Emergency discussion of merger and acquisition items for recent acquisition." Once again, the company made an acquisition and informed the IT organization only after the deal was signed.

We understand that these deals need to be kept under wraps for legal reasons. The problem is that if we discover an issue that might affect the deal, it's difficult to go back and change the agreement. And dealing with issues related to the acquisition meant we had to temporarily stop working on our Sarbanes-Oxley compliance project.

Griping aside, we took part in the conference call and learned that the acquired firm has fewer than 50 employees, all of whom work in one location, and it does no software development outside the country. This definitely made life a lot easier for me.

The most important order of business was to get the new employees configured so they could access our intranet, use e-mail and sign up for benefits and payroll. From a security perspective, before we provided VPN client software or created a point-to-point VPN tunnel, we had to make sure that we wouldn't be introducing malicious code or activity from their environment into ours. We accomplished this by reviewing desktop configurations, ensuring that they were using antivirus software and conducting a scan of the desk-

top IP address space.

We had only a few hours to conduct our work, so I prioritized and started on the network scans. I got a listing of their IP address space and used Nessus, a freely available port scanner, to run a scan of the corporate desktop addresses.

The results were of some concern. Most Windows desktops hadn't been patched in almost nine months — an eternity for Windows systems. In addition, several Linux desktops were running vulnerable ver-

sions of applications like Secure Shell and Sendmail. And some users were running Telnet, an insecure remote-access utility. Since we were short on time, we gave the company's IT manager our Linux security guidelines and a copy of the assessment report.

For the Windows desktops, we had users install the latest patches and our corporate antivirus software. Our other immediate goal was to identify and take control of critical assets. This included a content versioning system repository containing the company's

source code, a workstation housing the company's financials and HR files, and backup tapes, which were being stored at an employee's home.

In general, the acquisition assessment went well. Other than the desktop environment, I didn't find any glaring security holes or issues. It took about six hours to get all the desktops to a point where we felt comfortable giving them access to our network. But this is just an interim step. In a month or so, all employees in the acquired company will be relocated to our corporate offices, where they'll receive our corporate-standard desktop hardware and software image.

Back to Sarb-Ox

I've received many e-mails regarding the status of our Sarbanes-Oxley Act compliance efforts. I didn't mention the work in my last column simply because I find audits and compliance work boring and didn't have much to report. But now I have an update: We hired one of the Big Four consulting firms to assist us in the preparation work toward our compliance efforts. It's not the firm that will actually audit us later this year, since Sarbanes-Oxley precludes us from using the same firm for both tasks.

The Sarbanes-Oxley guidelines are vague, and we had no experience in-house. So we figured that if we got a big-name consultancy to assist us, things would be done in a way that would be acceptable to the Big Four accounting firm that will be doing the audit.

Having this assistance has helped us tremendously. We've gotten to the point where we've identified our key controls — those areas that management felt were important to ensure the integrity of the IT infrastructure. At the

end of the day, management will attest to the effectiveness of the IT controls as they relate to the financial systems — and they will be the ones who could face legal consequences if the audit doesn't go well.

The auditors and a couple of members of our audit and compliance department developed a series of tests that correspond with the key controls. For example, one of the controls is that only database administrators can migrate code to a production Oracle application server. The test for this would be to obtain a list of the database administrators and ensure that only they have the proper permissions to execute the utility, which is used to migrate code and include bug fixes, patches and script changes on the Oracle database servers. This would be accomplished by getting screenshots of the password files and file permissions for certain code-migration utilities.

I've been spending a fair amount of time going through the tests to ensure that they're valid and identifying gaps or errors. So far, we've identified several. For example, in the database code-migration control, we discovered that administrators use a shared account that gives everyone in the administrators group permission to execute the utility that migrates code. Because we can't control or prove who has access to the shared account, this shared account is a gap. That and other problems either need to be fixed or deemed an acceptable risk by management.

Although the database migration issue is an easy fix, others may not be. It will be interesting to see what management wants fixed and what they'll be willing to live with as we go forward. ▀

WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussion in our forum: [QuickLink a1590](http://www.computerworld.com/secjournal)

To find a complete archive of our Security Manager's Journals, go online to [computerworld.com/secjournal](http://www.computerworld.com/secjournal)

SECURITY LOG

Security Bookshelf

■ *Network Security Hacks*, by Andrew Lockhart; O'Reilly & Associates, 2004.

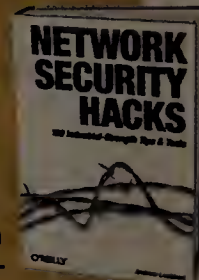
When I first started thumbing through this title, I thought that it might be one of those compendiums of tricks, tips and tools covered in other network security books. Although there are several areas the author discusses that have been covered elsewhere, Lockhart spends only a few pages on those subjects before moving on. For example, just six pages are devoted to the Nessus remote security scanner.

I was pleasantly surprised to see that the author took time to present some lesser-known but very useful tips. For example, he talks about tools such as Sguil, a real-time monitoring tool for intrusion-detection systems. The book doesn't include a companion CD-ROM containing the tools, but it does offer Web links where you can download them. I also would have liked to see security tips for routers and switches. Nonetheless, this is a great complement to the other titles in O'Reilly's Hacks series.

— Mathias Thurman

Database Security Software Released

Guardium Inc., a Waltham, Mass.-based database security software vendor, announced a set of integrated applications for protecting relational databases. The SQL Guard Security Suite features a module called HealthGuard that lets companies continuously assess and monitor enterprise database security and provides metrics and methods for optimizing security, according to Guardium. The PolicyGuard module is available for developing and enforcing database access rules, while the AuditGuard component audits all database access activities. Each module costs \$2,995.



**SECURITY
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**“
Most Windows
desktops hadn't been
patched in almost
nine months –
an eternity for
Windows systems.**

BRIEFS

Axena Ships Sarb-Ox Tool Kit

Axena Inc. is shipping its SOAx Toolkit, software that's designed to provide companies with updates on their internal controls environment to help them satisfy the requirements of the Sarbanes-Oxley Act. The browser-based software supports multiple languages, according to Orlando-based Axena. Pricing starts at \$25,000 for 25 seats.

Network Monitoring Software Updated

Network Instruments LLC has announced Observer 10, a network management, analysis and troubleshooting tool for use with remote networks, virtual LANs and wireless networks. With the new version, network monitoring as well as analysis and processing of network data is conducted at the individual probe level, according to the Minneapolis-based company. Pricing for Observer starts at \$995.

BEA Upgrades Developers Portal

BEA Systems Inc. is expanding its Dev2dev developer portal site to include technical content from the Java community and O'Reilly Media Inc. CollabNet Inc. is providing the infrastructure to make the site more interactive. The enhanced portal is scheduled to be unveiled in October, BEA said.

Dime-a-Minute Web Conferencing Added

A pay-per-use option is now available for ASAP, an instant-messaging-based Web collaboration application from Convoq Inc. ASAP combines video- and audioconferencing over IP, text chat, screen-sharing and PowerPoint presentations for 10 cents a minute per participant, says Lexington, Mass.-based Convoq. ASAP also allows users to detect the presence of users on other IM systems and invite them to participate in chat sessions.

DANIEL J. WEITZNER

Transparency Is Clearly on the Way

THE PERFECT STORM of transparency is gathering over today's enterprise computing environment. Today we are seeing the gradual demise of stovepipe applications, a rapid decline in the cost of enterprisewide (and Webwide) queries and a stunning proliferation of data from sensor networks inside and outside the enterprise. Add to this the fact that storage costs seem to

be approaching zero, and you have the makings of a transparent enterprise.

In a transparent enterprise, we will be able to know more about the disparate data sets that we create, find unexpected connections in previously unconnected pieces of data and see more information about individuals, whether they are customers or employees. Transparency will emerge through business intelligence systems, in buildings whose security systems record and log the identity of anyone in the facility at any given moment, and in collections of telemetry data from various private and public wireless networks that tell us the location of individual devices and their users.

Consider the enterprise data store that not only has detailed sales transactions but also travel expense reports such as rental car records, cell phone billing details, meal receipts and perhaps even electronic toll-booth records. Of course sales managers will be able to determine which sales rep has the most efficient sales-to-expense ratio. But managers may also be able to figure out that an employee exceeded the speed limit because he wrote a



DANIEL J. WEITZNER is technology and society domain lead at the World Wide Web Consortium and principal research scientist at the MIT Computer Science and Artificial Intelligence Laboratory. The opinions expressed here are his alone. He can be reached at djweitzn@csail.mit.edu.

sales invoice in Albany, N.Y., just two hours and 10 minutes after leaving Burlington, Vt. Rental car records and MapQuest will confirm that it should take two hours and 18 minutes to drive that distance at the legal speed limit.

If you've got a database integration or business intelligence project that's behind schedule, you're probably skeptical about whether this magic that I've dubbed transparency will ever arrive. Looking past near-term sticking points, we can, however, be confident that it will.

We're collecting more and more information, and it's easier to just keep it all than it is to figure out what to delete. Structured data formats such as XML and RDF are making it possible to mine this growing volume of data for new information. Perhaps most important, the systems we build today will one day support queries that we didn't even anticipate.

Changes in the public policy environment are also leading us toward greater transparency. Regulatory requirements such as the Sarbanes-Oxley Act and a California law requiring disclosure of security incidents demand greater systems transparency.

Privacy advocates such as science fiction writer David Brin are even calling for increased transparency of surveillance systems to safeguard privacy.

While transparency-producing systems don't require that we plan queries in advance, it behooves us to prepare for the impact of this new-found power. Do we have any idea how work styles will change? Will the ability to discover new relationships in competitively sensitive data create new security risks? Who's in charge of taking advantage of the power of transparency, and who sets the rules for what's acceptable? Do we have privacy policies to deal with the flood of revealing personal location information? Are we evolving social conventions to help people deal with their increased exposure wisely? How do employees feel about all of this? Perhaps the key question is, are we doing the best job of leveraging an increasingly transparent environment to make our enterprises more efficient and productive?

I'll be exploring individual facets of the transparent enterprise in future columns. But why write about this here, in the pages of *Computerworld*? I believe that CIOs and other IT professionals are on the forefront of the transparency revolution, like it or not. You know the great breadth of data available to you, and you see the gradual (sometimes painfully gradual) integration of systems across the enterprise. You're transparency experts already. It's the rest of the world that has to catch up. What's your experience with enterprise transparency? How is your organization adapting? Is it the boon or bane of your existence, or am I just imagining all of this? I look forward to hearing from you. **48574**

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7:45am to 8:15am	Registration and Networking Breakfast
8:15am to 8:45am	Rebuilding the IT Foundation Maryfran Johnson, Editor in Chief, Computerworld
8:45am to 9:15am	Consolidation and the Data Center: Boosting Business Performance and Application Availability Richard Villars, Vice President, Storage Systems Research, IDC
9:15am to 9:45am	Consolidation Strategies for a New Media World Andr� Mendes, Chief Technology Integration Officer, PBS
9:45am to 10:15am	Refreshment and Networking Break
10:15am to 10:45am	Perspectives from Oppenheimer Funds Tim Gerlach, Manager, Telecommunications, Oppenheimer Funds
10:45am to 11:15am	Customer Challenges and Solutions: Real-Life Scenarios Connecting Data Centers Over Distance Steve Adolph, CTO, Enterprise Solutions Group, CIENA
11:15am to noon	Panel: Overcoming Management Barriers — Making the Case for Consolidation Panel Moderator: Julia King, National Correspondent, Computerworld Panelists: Paul Bergamo, Chief Technology Officer, Liberty Mutual; Stephen Morin, Chief Information Officer, TAC Worldwide Companies; Fred Pond, Director of Information Services, The Schnitzer Group of Companies
Noon	Program Concludes

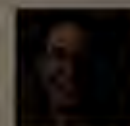
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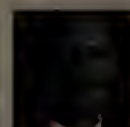
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Q&A

Securing the Corporation

Internet vulnerabilities and back doors that can be created through outsourced application development were just a few of the security issues fielded in a panel discussion with four CSOs. **Page 36**

Career Watch

Navigating the move from a purely technical job to the business side of the organization; the effect of fewer computer science grads entering the workforce; and the best and worst places to recruit CIOs. **Page 37**

IT MENTOR

Listen!

Former IT manager Dick Lefkon says the key to getting better requirements for IT projects is to teach your business analysts to interview users properly. Here's how. **Page 35**



Network Services Co. CIO Michael H. Hugos (right) enlisted the support of sales vice president Dave Smith (left) before pitching his idea for a collaborative forecasting system to top business executives.

WHEN CIO Michael H. Hugos approached his company's top business executives with an idea for building a collaborative forecasting system for customers, the executives immediately became uneasy and suspicious.

"The finance people were worried I'd commit [them] to a multimillion-dollar project, and the sales people were worried I'd stir up a hornet's nest with their customers," says Hugos, CIO at Network Services Co., a \$6.8 billion distribution cooperative in the Chicago suburb of Mount Prospect.

But Hugos persisted. He created a brief PowerPoint presentation explaining his plan for a relatively simple and inexpensive online database that both customers and NSC employees could access to view, correct and update a single set of forecast numbers. He took it back to NSC's vice president of sales, Dave Smith, with whom he is chummy, and to the head of customer service. Together, they showed it to one of NSC's top customer companies, which gave it an enthusiastic thumbs up.

"Mike is a great salesman," says Jennifer Jackolin, NSC's director of cus-

ANDY GOODWIN

**SHOW
SOME**

HOW TO WIN SUPPORT FOR YOUR BRILLIANT BUT UNSOLICITED IT IDEAS.

BY JULIA KING

Initiative!

tomer service. "I always thought of him as a salesman disguised as a CIO. He is a terrific collaborator and idea man."

Hugos is also among an elite group of proactive IT leaders who haven't been intimidated by back-to-back years of cost cutting, slashed budgets and dismal business/IT alignment scores. In March, a paltry 10% of 200 executives jointly surveyed by Deloitte Consulting and IDG Research Services reported that their companies have been successful at aligning IT with corporate strategies.

"Some of us have felt beat up, and we've taken a passive position in the IT profession," says Hugos, who is a *Computerworld* columnist. That makes it easy to fall into the trap of waiting around to be told what to do. "I think we have slipped into this out of a defensive reaction, and now it's time to brush ourselves off and try again," he says.

Here's some advice from CIOs who successfully pushed through their unsolicited ideas, saving or earning their companies millions of dollars in the process.

Knowledge Is Power

Knowing the business inside and out is the best and fastest way IT can gain credibility for its homegrown ideas for addressing business needs. That's why Bill Homa, CIO at Hannaford Bros. Co., a 120-store grocery chain based in Portland, Maine, fills IT positions with people who have worked on the front lines. "Unless you've worked in a store, you can't experience all of the issues that people there run up against," says Homa. Hannaford's head of retail systems, for example, was a store manager for 15 years.

That business experience was the linchpin in winning over executive support for an IT proposal to equip all stores with wireless technology, Homa says. Today, all ordering, inventory and product layout activities are performed in stores via handheld wireless devices with access to a real-time online data-



"Unless you've worked in a store, you can't experience all of the issues that people there run up against."

BILL HOMA, CIO, HANNAFORD BROS.

HERE'S HOW TO SHOW SOME INITIATIVE

- Know your company's customers, markets and competitors – and their IT capabilities.
- Read the trade publications that your CFO and CEO read.
- Buddy up with regional sales managers. They're your window to what's happening on the front lines of the business.
- Always seek to relieve conflict and drudgery in business processes.
- When feasible, let IT employees test-drive your ideas first.
- Base your suggestions on your IT department's strengths.
- Build credibility with quick-hit, easy-payback projects. Recruit allies in functional business departments and get them to fund such projects.

base of purchasing and product history. "When someone in the store is ordering a product, we can prompt them with what we think they should order based on that store's previous week's sales as well as their sales for the same week of the previous year," Homa explains. A single application for marking down perishable meat and poultry has paid a 100% return on Hannaford's \$2 million investment in wireless infrastructure, which now supports 11 different applications, Homa says.

Other CIOs recommend organizing the IT department so that a team of staffers is dedicated exclusively to staying current on all business issues.

At Calpine Corp., an energy producer in San Jose, CIO Dennis Fishback has created an IT team whose sole job is to study the markets in which Calpine operates. Fishback says it's all part of his philosophy and drive to have IT "transform" the business rather than simply help or improve it.

"The people we have in IS in many cases are energy professionals first and IT specialists second," Fishback says. Indeed, it was IT — as opposed to brokers or financial executives — that conceived the idea and pushed for the creation of a set of real-time interfaces to several energy markets. Since 2002, Calpine's \$136,000 investment in the interfaces has helped generate or protect millions of dollars in revenue, according to Fishback.

"Nobody from the business came

and asked us for these real-time interfaces," Fishback stresses. "We [in IT] recognized the need. IT has to be proactive. You have to understand the business. It's more important than understanding the technology."

Sell Your Strengths

IT services giant Accenture Ltd. formally reviews and updates its IT strategy every two years. It was during one of those reviews that CIO Frank Modruson, formerly a consultant at the company, decided to compare his own list of internal IT strengths with the portfolio of IT services Accenture sells in the market.

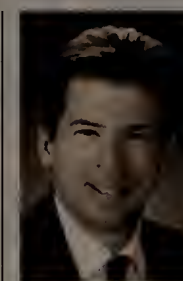
"Internally, we had a strength in managing and architecting IT infrastructure, yet that was not a service we were offering in the market," Modruson recalls. Accenture had also just migrated 80,000 of its own users from Lotus Notes to Microsoft e-mail, yet Microsoft integration was another key strength that was not on the company's list of revenue-generating service offerings.

Working with the executive steering committee, Modruson pushed for the company to offer both services, which it now sells. Accenture also entered into a joint venture with Microsoft Corp. to create Avanade Inc., a global technology integration company dedicated to Microsoft software. Launched in April 2000, Seattle-based Avanade now boasts more than 1,000 customers and 2,000 employees.

"The business is reaching out to the CIO to drive more [innovation]," Modruson says. Even though he has seen budget cuts and an overall down economy force many IT organizations into "order-taking mode," IT needs to be proactive, he says. "That's what we tell our clients they should be doing, too."

Try This at Home

At Marcus & Millichap Real Estate Investment Brokerage Co. in Encino, Calif., "anything that comes out of my department has to make brokers' jobs more efficient," says CIO Rick Peltz. He often tests ideas in IT before bring-



"Anything that comes out of my department has to make brokers' jobs more efficient."

RICK PELTZ, CIO, MARCUS & MILLICHAP

ing them to the business.

For example, before floating his proposal to equip the company's 800 brokers with wireless BlackBerry devices as a way to stay current with e-mail, he decided to try them first in his own department, which readily embraced the technology. Given IT's positive response, Peltz knew the BlackBerries were right for busy agents looking to stay in contact with clients without lugging around their laptop computers.

He was right. More than 100 agents "flocked to the technology within the first two months," he says.

That gave Peltz and the IT department the credibility and the \$1 million in funding needed to build and launch a Web-based marketing application that lets agents create a customized marketing presentation — with the look and feel of a PowerPoint presentation — using information that is stored in templates and accessible via the Internet. With the previous marketing application, agents had to be on the company intranet to access the information they needed for presentations.

"It was a fixed solution. If they decided to work on the weekend at home, they'd have to re-enter all of the information," Peltz says. "We hooked them on this new application" because it simplified and shortened the creation of marketing packages, he says.

What users want from IT, Peltz explains, is "a way to streamline processes and support to make a new process easy." The best way to do that, he adds, is to first use the technology you're proposing internally and then decide whether the benefits are truly there.

The bottom line, says Calpine's Fishback, is that CIOs can take one of two paths: "You can be a reactive order-taker, or a business process change agent," he says. If you allow yourself to be an order-taker, "you're a prime candidate for outsourcing," he explains. "If you really want to make a value-added contribution to your company, you have to be proactive." **48047**



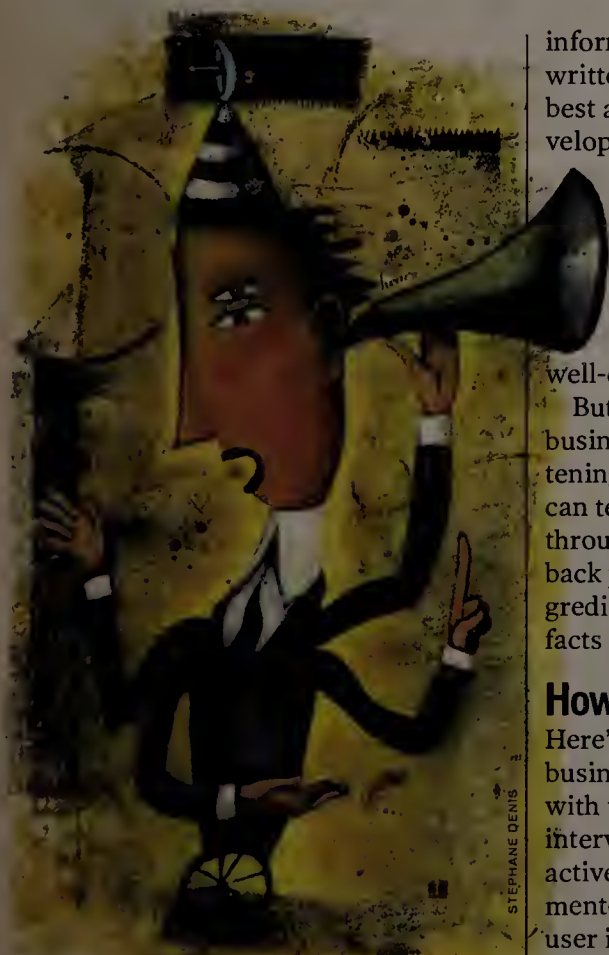
"You can be a reactive order-taker, or a business process change agent."

DENNIS FISHBACK, CIO, CALPINE CORP.

Listen!

Want to build better systems? Teach your people to conduct better user interviews.

By Dick Lefkon



information before specifications are written. Dust it off, distribute it to your best advisers, and discuss it. Then develop a plan for improving and re-implementing it. That way, you'll be sure that all the important questions you come up with in advance will get asked in the first interview. This will go a long way toward producing a well-designed system.

But this works only if the business analyst is really listening to the answers. You can teach him to listen through a simple tracking-and-feedback protocol, and that's the second ingredient for getting better business facts into your design specifications.

How the System Works

Here's how it works: A supervisor or business analyst mentor tags along with the business analyst to the user interview. At the user session, both the active business analyst and the silent mentor write on copies of the standard user interview form. But while the analyst captures business facts, the mentor uses the form to record sequences of code letters plus occasional keywords to facilitate later review of the session. The user needn't be told that the mentor is "grading" the analyst's interviewing skills.

Using a simple, 10-letter mnemonic code (see box at right), the mentor notes what he sees and hears every few seconds during the interview. Even if the mentor has never before coded or analyzed interviews, the process is easy to learn and can be quickly internalized with a little practice.

Here's how a mentor might employ the code to record a few seconds of an interview:

■ **ANALYST:** What process difficulties have you had with the current bond trading system? (Mentor: Q...Q) **USER:** Well, we've been booking styrips and zero coupon bonds as very long-term T-bills, but sometimes the P&L results reverse

credits and debits and also come out much bigger than the trader expected. (Mentor: A...A...A...A)

■ **ANALYST:** So you're saying T-bills lasting many years sometimes have their profits and losses reversed and have an unexpectedly large magnitude? (Mentor: B...B...B)

USER: Come to think of it, I just recalled some real bookkeeping problems the such-and-such system caused last year. (Mentor: N...N)

■ **ANALYST:** Yes, I remember about bookkeeping very well. You know, I got all A's and B's in it at Wharton. (Mentor: X...X...X)

Later, the mentor and analyst should meet to go over the mentor's notated user interview form, and the mentor can explain how the analyst encouraged or discouraged the user's information flow during the session.

The analyst should easily discern where improvements are needed from the raw counts as well as the sequences of the code letters. For instance, producing lots of QA

and QN sequences is good, even with intervening S's. But frequent QQQ's or XXQ's

may mean that the interviewer is wasting time by overexplaining questions.

Usually, business analysts readily accept a mentor's guidance and keep the 10 letters in mind at subsequent user interviews. You'll find that they become better interviewers through practice, followed by a half-hour critique in which real counts of the letter codes are reviewed in context.

Soon, your design specifications will

IT MENTOR

Self Test

Try categorizing each of these phrases with one of the 10 codes:

1. [] Please disable your phone ringer.
2. [] That made us lose a big client.
3. [] Which buildings will they be in?
4. [] Your reports are easy to read.
5. [] We're upgrading the mail server.
6. [] Business user searches for folder.
7. [] Users seldom describe needs well.
8. [] I can see why you got angry.
9. [] Would an audit trail prevent that?
10. [] 80 clerks, but only 20 at a time.

Answers: 1-D; 2-N; 3-Q; 4-P; 5-X; 6-S; 7-J; 8-C; 9-B; 10-A

be written from more and better business-user input. ☎ 48290

Lefkon is a former IT manager at Smith Barney and Equitable Capital who now consults for financial services companies. Contact him at aitp368@hotmail.com.

This is the first in an occasional series of columns written by IT managers for IT managers.

Red-light statements are appropriate to introduce the session, but interviewer-centered X's and D's, and especially J's, thereafter should be less frequent than in ordinary conversation. After all, this time has been scheduled to elicit good, applicable answers and insights from users as quickly and painlessly as possible.

Conversational flow increases when peppered with green-light politeness, and responding to an answer or insight by building on a user idea can spur creativity while minimizing the chance of capturing information the user didn't really give.

Don't worry too much about silence when the interviewee is taking time to think things out.

eXplain information to user
Direct user action
Justify self vs. user

Question user
Answer given by user
New user insight

Build upon user idea
Commiserate
Praise or encourage user

Silence or hubbub

ASK NEARLY ANY IT MANAGER how helpful business users are, and he will eventually say something like, "I know it's not their fault, but when I expend resources to gather predesign information from the business users, they tell us only half of what we need to know and then give me trouble at sign-off when we've built exactly what they asked for."

That may be true. But why?

Maybe it's because the business analysts who question the users aren't routinely given real training on how to conduct an interview and don't receive feedback on their performance. They may be schooled in how to distill the vital facts into UML product templates but not in how to get the valid facts from users in the first place.

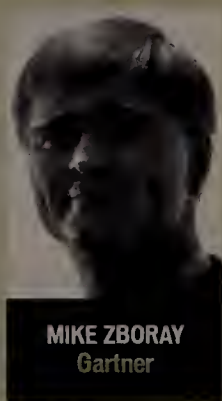
Half the solution is to construct and require regular use of a user interview form. Every IT unit should have such a form for gathering systems planning



STEPHEN FOSTER
Avaya



DON GARVEY
Chubb Insurance



MIKE ZBORAY
Gartner



JONATHAN ZWANG
Aventis
Pharmaceuticals

SECURING the CORPORATION

Four chief security officers discuss the steps they've taken to safeguard their organizations' IT infrastructures from internal and external threats.

Q&A

HACKERS. MOLES. CYBERTERRORISTS.

Back doors left by software developers. These are some of the primary challenges that corporate chief security officers are facing these days. In May, Computerworld's Thomas Hoffman moderated a panel discussion with four CSOs who explored these topics at a meeting of the New Jersey chapter of the Society for Information Management.

The panelists who participated in the discussion at the meeting in Morristown were **Stephen Foster**, global chief information security officer at Avaya Inc. in Basking Ridge, N.J.; **Don Garvey**, chief security officer at Chubb Group of Insurance Companies in Warren, N.J.; **Mike Zboray**, chief security officer at Gartner Inc. in Stamford, Conn.; and **Jonathan Zwang**, head of global infrastructure strategic planning, benchmarking and information systems security at Aventis Pharmaceuticals Inc. in Bridgewater, N.J.

What are your organization's top security concerns today, and what steps are you taking to address them?

GARVEY: One of the things that's emerging is the dependence on the Internet infrastructure. Two or three years ago, if Internet access was lost for a couple of days, it would be [merely] inconvenient unless you were in an online business.

But if a terrorist group or a group of hackers wanted to take the Internet out, you could really affect the U.S. economy today, and I don't think it's that difficult to do. Executives don't realize just how dependent they are on that infrastructure, and we need to sit down with them and start to build a strategy around how we would conduct our business if the Internet were disrupted.

ZWANG: One of the concerns that I have right now is what I call cybervandals — basically, kids who have nothing better to do than to create worms and viruses. I see a disturbing trend: that it's starting to escalate to organized crime and move toward cyberterrorism.

What are some of the key security challenges posed through business process or IT outsourcing?

FOSTER: One of the problems with outsourcing is ensuring the quality of work. A lot of development work is being sent offshore to India and Asia. But what controls are in place to ensure quality of service, confidentiality of information, protection of proprietary assets, [and] proper background investigations for employees working with your information? You're potentially giving the keys to the kingdom to an outsourcer, and you're relying on them to provide good security.

We have to push back with our executives and advise them that the security risks might outweigh the cost savings through outsourcing.

ZBORAY: The Gartner culture has always been, "Do it now and then find out who you were supposed to ask." The problem is that we had some staffers outside of headquarters who were acquiring Web services that we didn't know about, and the security state of those sites was unverified.

I can remember once when our CIO called me and asked, "What the heck happened to our Web site?" None of us in IT knew what he was referring to. After some digging, we found that one of our business units had acquired Web services through a service provider and then that outsourced site was hacked.

What worked for us was teaming up with the contractors people, since they have more leverage than we do in IT. As a result, all external acquisitions have to be passed through filters to ensure that technologies and online services we utilize have the appropriate security controls.

How do you make sure there aren't any back doors in software that has been outsourced for development or maintenance?

FOSTER: The only real assurance that back doors have not been coded into an application is to conduct code reviews. [That] can be almost as expensive as the development costs. If you had to do code reviews on all overseas development, it would offset the cost benefits of offshoring your development work. One answer is to conduct more proactive scans of your network to look for such attacks.

ZWANG: You have to apply multiple techniques, such as monitoring what comes into and goes out of your organization. Make sure that you test access points into your environment to see if experts can break in.

How do you communicate to your chief financial officer the steps you're taking to address the security requirements of regulations such as the Sarbanes-Oxley Act?

ZWANG: You have to ask, "Who is the real owner of a business process?" and then work with them to gather those security requirements.

FOSTER: Everything can't be solved by technology or IT controls. We have to challenge business executives to make sure we are requiring all business owners to have better process controls in place.

What are the key shortcomings you would like to see security software vendors address?

GARVEY: Vendors have been playing catch-up in information security for years. Vendors need to spend more time meeting with customers to find out what their challenges are instead of dealing with that vulnerability after a couple of years.

ZWANG: One of the biggest holes we have right now, which is just starting to be addressed, is device and data authentication. It's not going to be a Holy Grail or a silver bullet, but it should be one of the broadest jumps that we can make, to know where the device is that's connected to our environment, who it belongs to and where the data is coming from. **48285**

Career Watch

Easy Marks and Tough Targets

VIRTUALLY EVERY Fortune 100 company boasts its share of talented executives. But the amount of effort it takes to recruit them away from their current employers can vary greatly, according to executive search firm Morgan Howard Worldwide. The Stamford, Conn.-

based recruiter recently compiled a list of the easiest and hardest companies to crack when it comes to recruiting key talent. Among the easiest marks: Fannie Mae, American International Group and Verizon Communications. Executives tend to stay put at Wal-Mart, General Electric and The Home Depot, says Morgan Howard President Marc Lewis.

"Cash, bonuses and other compensation components are only one factor in determining whether a company is at risk of losing its top talent," says Lewis. Other key factors include the CEO's ability to connect with company leaders and communicate his vision, the existence of an organizational structure that recognizes and

rewards top-performing talent, identification of clear career tracks for executive-level positions, and leaders who are allowed sufficient autonomy to develop their own ideas.

The companies on the easy-target list were weak on at least two and often three of those factors, Lewis says.

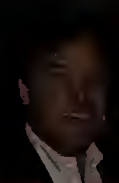
EASIEST

- Fannie Mae
- American International Group Inc.
- Microsoft Co.
- Verizon Communications Inc.
- Thomson-Pyckard Co.
- Citigroup Inc.
- Ford Motor Co.
- Pfizer Corp.
- Novartis Corp.

HARDEST

- Wal-Mart Stores Inc.
- Dell Inc.
- General Electric Co.
- The Home Depot Inc.
- Intel Corp.
- McKesson Corp.
- Cisco Systems Inc.
- ConocoPhillips Co.
- Exxon Mobil Corp.
- The Kroger Co.

Michael Amigoni



TITLE: Chief operating officer

COMPANY: ARO Inc., Kansas City, Mo.

Q&A

Amigoni, 44, is a 14-year veteran of ARO, a business process outsourcing company that offers a wide range of services, including data entry, call center support, and document and forms management, all of which are performed and delivered by employees who work in their homes. During his career with the company, he has held a variety of positions, working his way up from a consulting role to CIO and then moving into his current COO post. He spoke with *Computerworld* about his experiences as an IT professional moving between the technical and business sides of the enterprise.

What was your first job in IT? I started as a database consultant working with small companies. Eventually, I moved to ARO and into a full-time position programming database applications around a predictive dialer application the company had purchased.

How did you make the move to the business side? Was it a gradual transition, or did you make a clear-cut jump out of heads-down technical work to a business/strategy role? The move from a strictly IT job to operations was gradual, since we had to write and integrate other programming to support the predictive dialer application. I worked my way up to CIO. Eventually I was making more and more decisions about operations, since IT is the framework for building a more efficient and cost-effective operation. As a result of a person departing from the operations position, I assumed a dual role of CIO/COO. In an organization that has less than \$10 million in sales, a person can play both roles very effectively. But as we grew, my CIO role eventually was too much with the COO role, and a separate CIO was hired.

With more and more IT work, such as programming and application support and maintenance, moving offshore, do you see the need for purely technical skills on the decline here in the U.S.? Yes, I think technical ability alone will limit your job choices. However, with some business and operations background, you can be part of the team that manages any offshore activity.

In your opinion, are there other non-technical skills an IT professional should hone to ensure continued career success? I obtained an MBA at University of Illinois, specializing in both IT and finance. I believe that more and more IT involves making operations and marketing decisions. A person who can sit down with marketing/finance/accounting departments and speak their language and overlay this to IT is very valuable to organizations.

What advantages does your IT background and experience afford you in your role as COO? Seven years ago, I spearheaded our move to a virtual business model for our customer service and business process outsourcing. Back then, a virtual customer relationship management model was very cutting edge and still is seven years later. With my IT background, I was able to calculate risk on decisions that were being made. I coupled this IT background with my business and telecom knowledge to develop a business model for an all-virtual BPO services company. I see many operations managers at the mercy of IT [which is] telling them that this cannot be done or that cannot be done. Instead, I tell my IT managers what will be done with a lot of confidence.

What advice do you have for IT professionals looking to move into a hybrid position that requires business skills? I would suggest taking some graduate courses in marketing, finance and operations. These courses will teach you how to become more well rounded in business. You will understand that IT is not the center of the universe. Instead, products and services grow an organization. You can have the best enterprise network and systems, but without growing revenue from customers, you have nothing. An IT professional who can think like a marketing person in an IT shell will be a great asset to many businesses across many industries. ☎ 48418

— Julia King

Career Clip

THE BURSTING OF THE technology bubble and horror stories about unemployment and offshore outsourcing of tech jobs have dampened students' interest in computer careers and fueled a 23% decline in computer science program enrollments in U.S. universities between 2002 and 2003, according to recent report in the *Los Angeles Times*. Jeanne Ferrante, associate dean of the University of California, San Diego, School of Engineering, told the newspaper that the rising jobless rate for computer scientists and systems analysts over the past few years – and the accompanying erosion of salaries, bonuses and other amenities – have discouraged students. The enrollment

drop-off is happening just as U.S. companies are on the cusp of a hiring resurgence, which is prompting concerns about a scarcity of domestic tech professionals as well as a stifling of technological innovation.

The U.S. Department of Labor forecasts 46% growth in the number of jobs for computer software engineers between 2002 and 2012.

UNIVERSITY COMPUTER SCIENCE ENROLLMENT, 1999-2003

MIT	DOWN 44%
U.C. Berkeley	DOWN 41%
Georgia Institute of Technology	DOWN 45%

SOURCE: LOS ANGELES TIMES

CONTRACTS

DePauw Inks Online Music Deal

Online music retailer MusicRebellion.com, a division of Digonex Technologies Inc. in Indianapolis, announced that it will offer all 2,300 DePauw University students legal music through its Web-based platform on a pay-per-download basis without any added fees. The company will donate 1% of all sales back to Greencastle, Ind.-based DePauw for student scholarships.

Imerys Picks AT&T for VoIP

AT&T Corp. has secured a three-year, \$2.25 million contract to provide Paris-based mineral processor Imerys with IP-based data and voice networking services. Under the deal, AT&T will connect approximately 50 Imerys sites worldwide using its Global Managed Internet Service, allowing Imerys employees to share mining management systems in real time. AT&T also provides Imerys with local, long-distance and international voice service, as well as audio- and video-conferencing services.

Santa Clara Signs Outsourcing Pact

Dynamic Systems Inc., a Los Angeles-based technology and services provider, announced a five-year contract with the county of Santa Clara to manage its Sun Microsystems Inc. assets and service contracts. The contract also includes presales configuration, asset tracking and postsales integration and configuration.

Boston College Picks Dell Latitudes

Dell Inc. announced a three-year agreement with Boston College to offer students wireless-enabled Latitude D600 notebook computers via the online college bookstore. The program replaces a previous arrangement with IBM.

BART PERKINS

Objectivity: Don't Settle for Less

TODAY, IT'S VERY DIFFICULT to get objective advice regarding IT direction and strategy. Many of the firms that used to specialize in IT strategy work are now owned by large systems integrators or

computer manufacturers. To make matters worse, many IT suppliers now offer referral fees to firms that recommend their products and services. So much for objectivity.

Years ago, there was much more market fragmentation: Strategy firms dispensed advice, systems integrators built systems, outsourcers ran data centers, and manufacturers delivered hardware or software. There was no "one-stop shopping." On the positive side, the customer got objective advice. On the negative side, since the strategy firms didn't have delivery experience, their time and cost estimates were sometimes inaccurate. In addition, poor communication among the companies involved often resulted in misinformation, much like the old game of "telephone." These disconnects could cause expensive mistakes.

All parties believed that tighter links would offer benefits:

- Customers felt that they were more likely to have new systems delivered on time, on budget and with high quality if the people who built the plan were also responsible for executing it.

- Strategy firms wanted to grow. They saw that systems integration companies were getting 10 to 20 times as much revenue for implementing the plan as they were for building the plan.

- Systems integration firms felt that if they worked with senior executives to establish the strategy, they would

get more implementation work.

- Manufacturers viewed systems integration as a new line of business that would help them sell more of their traditional IT products.

End-to-end integration appeared to meet everyone's objectives. Therefore, some of the manufacturers and systems integrators began to acquire strategy firms: CSC acquired Index, EDS picked up A.T. Kearney, and Nolan, Norton & Co. was acquired by KPMG Peat Marwick. Other companies, such as Andersen

Consulting, started their own strategy groups. IBM did both.

Large companies that have their own strategy groups often use IT strategy and planning projects as loss leaders. They offer to do the planning work (worth hundreds of thousands of dollars) at minimal cost in order to get millions of dollars of hardware sales or systems integration work. Unfortunately, these plans often specify particular hardware, database software and application packages or services that can be performed only by their own company. So much for objectivity.

As a result of the industry consolidation, there are very few firms that can dispense truly independent advice, but they're out there if you look hard enough. When searching for objectivity, keep these tips in mind:

- Look for an independent "boutique." Although sometimes difficult

to find, these still exist. They are best found through referrals from people you trust.

- Draw a clear line between strategy and implementation contracts. To ensure objectivity, make the firm that develops the strategy ineligible to bid on the implementation. If you can't find an independent boutique, hire a big company but specify contractually that it will not be allowed to bid for resulting implementation projects.

- Demand contractual independence. In all cases, put language in the contract specifying that the firm developing the strategy and plan is not allowed to receive any referral or other fees from the suppliers they recommend.

- Monitor progress objectively. For large programs, consider retaining an independent firm to periodically monitor progress.

My dad taught me to "measure twice; cut once." That applies here as well, but on a much grander scale. If you already have an IT strategy from a large, multipurpose company, or if your CEO requires you to use a company for political reasons, hire an independent firm to provide a second opinion. A mistake in today's marketplace is prohibitively expensive; an independent opinion is well worth the cost. Just make sure the firm's staff is senior enough to have the breadth and depth of experience needed to accurately assess the validity of your IT strategy. Don't hire a firm that will cut costs by using a horde of recent college graduates.

Your IT strategy has an enormous impact on your business. It deserves and demands objective decisions as its foundation. Leverage your decision-making process by soliciting objective outside advice. ☎ 48294

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BART PERKINS is managing partner at Leverage Partners Inc. in Louisville, Ky., which helps CIOs manage their IT suppliers. He was CIO at Tricon Global Restaurants Inc. and Dole Food Co. Contact him at BartPerkins@LeveragePartners.com.

Senior Developer (NYC) Define scope of overall rational database modeling projects. Develop & implement project strategy & architecture, production schedules, projections & budget for assigned tasks and roles. Oversee installation, configuring & tuning of SQL Server 6.5, 7.0 & 2000 databases, servers & Oracle. Analyze & evaluate existing & proposed systems. Develop computer programs/systems & related procedures to process data. Provide comprehensive analysis for clients, prepare program specifications, diagrams, develop coding logic flowcharts, & test to ensure proper system performance. Prepare detailed progress reports for management & schedule projects for deliverable reviews & Quality Assurance tasks. BS/MS in Comp Sci, or any Engg or related field and relevant experience required. Send resume to Devon Archer, President, Sitaro Group, 48 Wall St., #1100, NY, NY 10005.

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SW Engineer - As member of s/ware development team, design & develop call control s/ware. Analyze s/ware requirements & functional specs. Design, code & test critical Call Control functionality includ'g: translations, CLASS 5/4 Services, AIN basic Call Model, messaging & associated protocols. Participate in design & code reviews. Maintain existing s/ware systems. Test & integrate telecom products. Must have BS in Computer Engineering, Comp Sci, EE or equiv, + 2 yrs exp in job offered or 2 yrs telecom s/ware development exp. Must have knowledge of internet protocols & the following telecom tools: CVS, GNU, LYNX, UNIX, INET & HAMMER, as well as strong coding skills in C. 40hrs/wk. Salary: \$75,000/yr. Send 2 copies of resume to: Case# 200300199, Division of Career Services, Labor Certification Unit, 19 Stanford St., 1st FL, Boston, MA 02114.

SRCT Inc. is seeking a **Software Engineer** experienced on AS400, DB2, COBOL, RPG. Please respond to Mr. Faiz, 3213 Ridgeway Rd, Lexington, KY 40513.

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Software Analyst/ Business Development Manager: Duties include gathering requirements, doing business analysis and proposing solutions for IT needs of healthcare and pharmaceutical industry. Will build and lead team to develop and customize software dealing with clinical trials for the pharmaceutical industry. Requirements Bachelor of Science degree in Science or Technology Field or equivalent and 1 year coursework in medicine or pharmacology required. Must have 3 yrs. exp. software analyst/business development manager or 3 yrs. exp. in marketing and/or research in the IT field. Since TechNation has clients located in several states and since assignments are of temporary nature, candidates must be willing to move from location to location for assignment duration that varies from 3 mos. to year. Email CV to: rtoffi@tnscinc.com, Rona Troffi, HR Mgr of TechNation Software Consulting, Inc., or mail to 300 N. Dakota Avenue, #505B, Sioux Falls, SD 57104.

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Senior System Analysts: Analyze, design, develop, test, implement, maintain and support application software using COBOL, PL/1, MQ Series, IMS DB/DC, J2EE, SAS. Requires Bachelors in Computer Science/Engineering or Related and 2 years experience.

Send resume to: HR Manager, Simplex Info Systems, Inc. 76 Northeast Blvd., Suite 32C Nashua, NH 03062, or email to: resumes@simplexinfo.com.

IT Network Engineer - Assist in analyzing local & wide area net systems. Plan/design LAN, MAN, & WAN networks utilizing Shared/Switched Ethernet, Gigabit Ethernet, FDDI, & Token Ring, in addition to: TCP/IP, IPX/SPX, SNMP, DHCP, AppleTalk, X.25, ATM, & Frame Relay, RIP, OSPF, IGRP, EIGRP, BGP, ISL, 802.1q, VTP, & STP. Assist in resolving interoperability problems to obtain operations across all platforms including e-mail, file transfer, multimedia, & teleconferencing. Provide support to tech network systems using above protocols, Network Analyzer, channel coding & transmission theory, number systems, codes, digital electronic signals & switches, Boolean algebra & reduction techs, arithmetic operation & circuits, code converters, multiplexers, & demultiplexers. Select op systems, protocol sts & configuring comm media using bridges, routers, gateways, transport media, TCP/IP, IPX/SPX, & SNA. Provide network modeling & simulation assistance to deliver client/server app functionality. BS Comp Sci, Eng or related & working/theoretical knowledge of LAN, MAN, WAN networks, Shared/Switched Ethernet, Gigabit Ethernet, FDDI, Token Ring topologies, TCP/IP, IPX/SPX, SNMP, DHCP, AppleTalk, X.25, ATM, & Frame Relay, RIP, OSPF, IGRP, EIGRP, BGP, ISL, 802.1q, VTP, STP protocols, Network Analyzer, channel coding, knowledge of digital electronic signals/switches, Boolean algebra & reduction techniques, arithmetic operation & circuits, code converters, multiplexers, demultiplexers, Bridges, routers, gateways, transport, media & SNA. \$65,300/yr. M-F. 40 hrs/wk. Denver, CO. Must have proof of legal authority to work permanently in U.S. Application by resume only to Workforce Development Programs, PO Box 46547, Denver, CO 80202. Ref Job#CO5086185.

An environmental engineering consulting firm with emphasis on mine remediation & restoration is seeking a GIS Database Administrator. Resp. inc. develop'g integrated d-bases for tracking remedial actions at historic sites such as the Bunker Hill Superfund Site, work with in-house & EPA Scientists, Civil Engineers & proj. mgrs. to des. d-bases & secure online interfaces to retrieve site info. such as ownership, soil-water-dust samples, analytical results & other remedial properties. Collect user reqs, design, implement, manage & maintain integrity of Environmental & Geog. Info. Sys. (GIS) d-bases for mine remediation & restoration projects. Use computer technology & tools such as MS-SQL server, T-SQL, ASP communications, Java & VB scripts, SAS statistical tech., ArcGIS, EquiS & Win. Server 2000. Reqs. are Bach. in Mining Engin'g or Comp. Sc. & 2 yrs. rel. exp. incl. mining reclamation & remediation d-base devlpmnt. U.S. evaluated equiv. Bach. of Technology in Mining Engineer'g with noted exp. is acceptable. M.S. & 1 yr. exp. is acceptable in lieu of Bach. & 2 yrs. exp. Send resume to HR Mgr., Terra Graphics Environmental Engineering, Inc., 121 S. Jackson St., Moscow, Idaho 83843.

McData Corp. seeks applicants for the position of Sr. Software Engineer in Sunnyvale, CA to design and develop Fibre Channel switch protocols and fabric services. Requirements include bachelor's in computer science and 3 yrs exp as a software engineer in a Windows 2000 and NT environment, including one year using Fibre Channel switch protocols. Requirements also include working knowledge of Fibre Channel analyzers and third party HBAs and their management utilities. Respond by resume to Kari Hill, McData, 380 Interlocken Crescent, Broomfield, CO 80021.

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Computer Programmer; 40 hrs/wk. 7:30am-4:30pm M-F. \$54,000/yr. Develop and enhance computer programs and decision support systems for employee benefit plans using third generation structured programming languages & Windows based technologies; website development both dynamic database driven & static page websites including designing, testing, and implementing of same; add new options to existing programs; document large projects defining new programs, enhancements, database structure, database administration and system flow using MS Word and Vision; confer with clients and coworkers to define new programs and modifications; communicate with clients regarding changes made to programs and facilitate training required to use new or modified programs; stay current on new technology items by reading, attending seminars & continuing education. Ed. Req. Bach. or Ed. Eq. in Computer Science, MIS, Commerce, Business Administration & 2 yrs. exp. as Software Systems Analyst, Systems Engineer, Software Consultant or comb. Work exp. must include 2 yrs. With Visual Basic 6, Structured Query Language, Transact SQL for Microsoft SQL Server 7, ASP coding, n-tier application development, Data Modeling, Visual Studio, Database Design & Administration, HTML, DHTML Javascripts, VB-script, Crystal Reports, Access, ADP, COM, Visual C++, Frontpage, Flash, Adobe Photoshop, packaging and deployment components of Visual Studio. Send resumes to Michigan Department of Career Development, P.O. Box 11170, Detroit, MI 48202-1170. Incl. ref. #222603 & social security # w/ Resume. Employer Paid Ad.

Senior Consultant

(Glen Mills, PA and other locations throughout the United States). Manage a team of client and consulting resources for the life cycle of SAP implementation projects, with a particular focus on companies in the manufacturing industry. Perform all required SAP (IM/MM/SAP Console) configuration and testing. Prepare functional specifications, unit and integration testing scenarios. Design, configure, implement, and test transactions for Inventory, Warehouse Management and Shipping. Create queries, identify and analyze master data and inventory load errors and rectify problems. Provide on-site implementation and Go-Live support for the clients. Utilize SAP interfaces including ALE, IDocs, and Remote Functions Calls (RFC), and Barcoding Technology. Assist in developing business cases.

The wage offered is \$105,368/year. The work schedule is Monday-Friday 9:00am-5:00pm. The minimum requirements are as follows: Bachelor's degree in Computer Science, Math, Business Administration, Information Systems, or Engineering (any) + 5 years experience in the job offered or 5 years experience as a Consultant, Systems Analyst or Project Team Member. Related experience must include SAP Console configuration, SAP RFC (Remote Function Calls), Barcoding Technology, SAP ALE configuration, SAP IDoc Configuration, SAP Inventory Management, and Warehouse Management configuration.

Please send your resume, referencing Job Order Number **WEB439858** to the: PA CareerLink, FLC Unit, 235 W Chelton Ave., Philadelphia, PA 19144. EOE.

RedPrairie Corporation, world leader in provision of logistics execution systems, seeks the following: **Managers (Technical)** for supply chain execution application services at Cary, NC, office, to assist in leading in technical aspects of customer implementation & to mentor/provide administrative lead for group of Software Engineers. Require Bachelor's in Computer Science, MIS, Engineering or related field (equivalent combination education/experience or equivalent experience considered) plus 3 yrs experience in computer-related occupation, including leadership role in project implementing warehouse management or supply chain software, & experience in automated warehouse/distribution systems industry. **Senior Manager** for supply chain execution application services at Cary, NC, office, with responsibility for major portion of customer TMS products, to interface with internal groups to enable delivery of products that meet customer's need, & to serve as primary point of contact for customers. Require Bachelor's Computer Science, MIS, Engineering or related field (equivalent combination education/experience or equivalent experience considered) plus 5 yrs experience in computer-related occupation, including experience in logistics & supply chain consulting or related field, TMS functionality, & management of logistics projects. Interested candidates should e-mail, fax or mail a resume and cover letter, including code CW1 with salary requirements to:

RedPrairie Corporation
Attn: Organizational Development
20700 Swenson Drive
Waukesha, WI 53186
Fax: 262-317-2638
Email: Recruiter@redprairie.com

Computer Programmer: Develop/maintain customer databases using MIS; retrieve & analyze data using Unix &/or DOS-based PMS v9.6f/g; develop, modify & maintain accounting & budgeting systems; system & network administration of MS Windows based computers. Req 4 yrs work exp in job offered. Send resume to BKN and S Partnership, 2920 Clairmont Rd., Atlanta, GA 30329.

SW Engineer - Design & develop call control s/ware. Analyze s/ware requirements & functional specs. Design, code & test critical Call Control functionality including: translations, CLASS 5/4 Services, AIN basic Call Model, messaging & associated protocols. Participate in design & code reviews. Maintain existing s/ware systems. Test & integrate telecom products. Must have Bach in EE, Comp Eng'g/Sci, or other relevant field, + 2 yrs exp in job offered or 2 yrs telecom s/ware development exp. Must have knowledge of Internet Protocols, as well as telecom tools such as INET & GDB. Suitable candidates must also have strong coding skills in C programming language. 40hrs/wk. Salary: \$80,000/yr. Send 2 copies of resume to: Case#200300205, Division of Career Services, Labor Certification Unit, 19 Staniford St., 1st FL, Boston, MA 02114.

PROG. ANALYST - SYSTEMS ADMIN.

Install new software releases, system upgrades & software patches. Perform system backup & recovery. Maintain data files & monitor system config. to ensure data integrity. BS degree in Comp. Sci., Electrical or Electronics Engrng + 2 yrs exp. in job offered or as a Software Engrng - Sys. Admin. req'd. Exp. must include embedded programming SIP & H.323 protocols; Citrix on AIX and Solaris 9.0; Macola ERP & Reuters Kondor software; & Production DBA in Oracle 9, Sybase 12.5 and SQL Servers. High mobility preferred. 40 hrs/wk, OT as req'd, 9 am - 5 pm, \$66,730/yr. Submit resume to: Manager, Butler County CareerLink, Pullman Commerce Center, 112 Hollywood Drive, Suite 101, Butler, PA 16001-5699. Please refer to Job Order No. 441381.

Software Engineers Needed

Seeking qual. candidates possessing MS or equiv. and/or rel. work exp. Part of the req. rel. work exp. must include 3 yrs working w/Oracle Technologies. Duties include: Support & interface w/Oracle applications e-business suite components HR, PAY, OAB, OTL, OIC, AP, AR, GL, INV, PO & OM. Work w/Oracle, PL/SQL, Developer, Discoverer, & Workflow Builder. Send resume, references & salary requirements to: Exxor Inc., 8374 Market St., #161, Bradenton, FL 34202.

Computer Touch, LLC, is looking for a Programmer Analyst to develop and test Java features, administer Unix Accounts, create client websites for e-commerce and integrate and test GUI interface, and develop node to node routing protocols for wireless networks. Please send all resumes to Computer Touch, LLC, 9 Belgravia Terrace, Farmington, CT 06032, Attn: Human Resources Dept.

Convergence Network Specialist, Hauppauge, NY. Install and maintain Voice over IP phone systems. 2 yrs in job exp. req'd. Resume only to bg@cnet-works.net or CT Networks, 125 Wireless Blvd., Hauppauge Technology Center, Hauppauge, NY 11788, Attn: Barry Goldstein.

Softline Systems, Inc is seeking qualified individuals to work at client sites throughout the United States. We have openings for the following positions:

Oracle Programmer Analyst to develop various applications, user interface and database programs using Oracle, PL/SQL and SQL.

Data Warehouse Programmer Analyst to develop data warehouse and data marts using Business Objects, Oracle and PL/SQL.

Ab-Initio Programmer Analyst to develop data warehouse and data marts using Ab-Initio, Oracle, SQL and PL/SQL.

Teradata Developer to develop Teradata databases.

Apply to: Softline Systems, Inc, 1600 Boston Providence Highway, Walpole, MA 02081.

Seeking qualified applicants for the following positions in Memphis/Collierville, TN: **Senior Business Application Analyst.** Act as liaison between technical developers and users/customers. Requirements: Bachelor's degree or equivalent* in computer science, math, statistics, business or related field plus 5 years of experience in analyzing business systems and developing technical automated solutions. Experience with SQL, CGI environment and J2EE environment also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Marc Blackburn, FedEx Corporate Services, 4200 Regent Blvd., Irving, TX 75063. EOE M/F/D/V.

SW Engineer - As member of the s/ware development team, design & develop network management s/ware. Participate in design & code reviews. Maintain existing s/ware systems. Test & integrate cutting-edge telecom products. Must have BS in Computer Engineering, Comp Sci, EE or equiv, + 2 yrs exp in job offered or 2 yrs exp in telecom s/ware development, "C" coding. Must have exp w/Lynx & LINUX, GDB, SmartBits & ATM Modules. 40 hrs/wk. Salary: \$93,000. Send 2 copies of resume to: Case#200300204, Division of Career Services, Labor Certification Unit, 19 Staniford St., 1st FL, Boston, MA 02114.

Software Developer III. B.S. in Comp. Sci. or rel. field + 3 yrs complex programming exp. w/ASP, VB, & MS Access. Exp. w/HTML, JavaScript, & structured analysis & dsgrn methodologies. Ability to write complex SQL queries. Demonstrated knowl of relational d/bases & object oriented methodologies. Resumes to Erica Petersen, 4800 Westown Pkwy, #300, West Des Moines, IA 50266.

PROGRAMMER ANALYSTS for Overland Park, KS office. Develop & maintain software applications using Orbix, J2EE, MKS, TEMIP, Interwoven, Coolgen, Metrica, Netrac, Tuxedo, Tango, Eclipse, CORBA, RMI, RUP. Bachelors Degree req'd in Computers, Engineering or related field + 2yrs of related exp. 40 hrs/wk; Must have legal authority to work permanently in the U.S. Send resume to HR Manager, Spectrum Informatics Inc, 11936 W 119th St., #141, Overland Park, KS 66213.

SW Engineer - Design, code & test features for cutting edge telecom products. Modify product features to ensure conformance to ANSI specs. Analyze & fix bugs in system as they arise at various customer sites. Must have Bach. in Computer Science/Engineering, Electrical/Electronics Engineering, + 2 yrs exp in job offered or 2 yrs telecom s/ware development exp. Must have exp in telecom &/or data networking industry, including exp w/SS7 technology. In-depth knowledge of one or more telecom protocols required. 40 hrs/wk. Salary: \$80,000/yr. Send 2 copies of resume to: Case# 200300200, Division of Career Services, Labor Certification Unit, 19 Staniford St., 1st FL, Boston, MA 02114.

SOFTWARE ENGINEERS (12 positions): require Bachelor's or equivalent in Engineering/Computer Science/Mathematics/Science or closely related field with two years experience providing skills in described duties, at \$79,000 per year. Provide on-site consulting in design, analysis and development of software for legacy systems in IBM mainframe environment; development and administration in Oracle, DB2, SQL Server and Sybase; e-commerce and web systems development in Microsoft, Java and related technologies; network management systems development with Netscape Server and related tools; SAP R/3 application systems on Windows with DOS and ABAP/4 and related modules. 40% travel to client sites in the United States. Mail resumes to: YASHI Technologies, Inc., 605 17th Avenue, Suite 1, East Moline, IL 61244.

Computers - Database Administrators needed. Seeking qual. candidates possessing BS or equiv. and/or relevant work exp. Duties include: Administer & support database development & production environment; Work with Informix, Sun Solaris, AIX, HP-UX, DB2 UDB & Veritas. Mail resume & ref. to: Object Solutions, Inc., Attn: HR, 3025 Harbor Lane, Plymouth, MN 55447-5119.



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SW Engineer - As member of s/ware development team, design & develop call control s/ware. Analyze s/ware requirements & functional specs. Design, code & test critical Call Control functionality includ'g: translations, CLASS 5/4 Services, AIN basic Call Model, messaging & associated protocols. Participate in design & code reviews. Maintain existing s/ware systems. Test & integrate telecom products. Must have B.S. in Computer Engineering, Comp Sci, EE or equiv, + 2 yrs exp in job offered or 2 yrs telecom s/ware development exp. Must have knowledge in at least one of the following telecom protocols: Call Processing or TCP/IP, as well as strong coding skills in C. 40hrs/wk. Salary: \$78,000/yr. Send 2 copies of resume to: Case#200300201, Division of Career Services, Labor Certification Unit, 19 Staniford St., 1st FL, Boston, MA 02114.

COMPUTERS: HCL Technologies (MASS), Inc. has multiple openings at its corporate offices located in Quincy, MA and their branch office in Tallahassee, FL for the following positions: Software Engineers; Systems Analysts; Programmer Analysts; Project Managers; Account Managers/Sales Managers; Sales Engineers; Market Research Analysts; Business/Management Analysts; and Network Engineers. Salary commensurate with education and experience. All positions may involve travel or relocation to various sites throughout the U.S. Send resume to: HCL Technologies (MASS), Inc. Attn.: Rajiv Shesh, 400 Crown Colony Drive Suite # 500 Quincy, MA 02169 indicating the position you are applying for.

Infomerica is looking for system /programmer analysts, software /project engineers & computer consultants working at different sites (travel required) using C/C++, Oracle, Java, ASP, Unix, EJP, ERP, VB, SQL, etc. Must have BS/MS with 1-year exp. in IT fields. Send resumes to info@infomericalinc.com. EOE.

Perk Systems, Inc. is looking for IT Analyst/Engineers to fill various positions using C/C++, Java, VB, Web Tech, Oracle, Unix-Sun Solaris, EJB, Rational Rose/UML, JSP, OOAD. Candidates must have MS/BS & IT experience. Apply at jobs@perksys.com. Travel maybe required. EOE.

Optimal Solutions Integration, Inc. has multiple openings for SAP and i2 Consultants, Software Analysts and System Analysts in our Irving, Texas and Washington, DC offices. Please send resumes with salary history and requirements to Optimal Solutions Integration, 8445 Freeport Parkway #240, Irving, TX 75063. Open to GreenCard holders or US Citizens.

Programmer/Analyst - Software Art Corp., a software consulting firm, requires software professionals with demonstrated hands-on experience in the following: Client Server: MS VB .NET, ASP .NET C#/C++/Oracle /Sybase/Windows/Unix DBA: Sybase/SQL Server Internet Computing: JAVA/CORBA/XML, JAVA Websphere/Weblogic.

QA Testers: Manual/Automated Business Analyst, National Account Managers SAS Programmers. Send resume to:

Software Art Corporation
lowa@softwareart.com

Managing Director: Directs/Coordinates R & D in Grid Computing. Plans/formulates R & D proposals. Responsible for strategic technology innovation/development/strategic planning process to balance mission/markets. Oversees launching of new technologically intensive products. Uses knowledge of federal government contracting regulations, incl. proposal development/pricing/project mgt. Uses knowledge in computer/communications networks/grid computing. Utilizes strong problem-solving ability. Collaborates w/colleagues/scientist/administrators. Conducts mediation to resolve disputes/manage competing organizational issues. Uses business/marketing skills. Represents MCNC to academic/government/commercial/professional constituencies. Req. Ph.D. Mathematics, Physics, Computer Science or related field, and 3 yrs exp. in job offered or 3 yrs exp. in Management of R & D in Grid Computing. Hrs. 8 am to 5 pm Send Resume to MCNC, Attn: Virginia Graves, PO Box 12889 Research Triangle Park, NC 27709-2889.

Technical Consultant: Interface with users (internal and external) to define system requirements and determine modification necessary for effective product. Write code, complete programming and test debug applications. Complete documentation and procedure for installation and maintenance of product. Analyze, design, program, troubleshoot, debug and modify local, network or internet-related computer programs for commercial or end user applications such as Process engineering, financial, insurance management or desktop applications product. Must have Multi Platform environment experience. Manual and automated testing experience and relational database experience and scripting experience. B.S. in Comp Science or equivalent and 2 years experience in job offered. 40hrs/wk (9:00 a.m. to 5:00 pm) \$80,878.00/yr. Please send two (2) copies of resume/letters to Job Order #2004-174. P.O. Box 989, Concord, NH 03302-0989.

SW (Test) Engineer - As member of s/ware testing team, test & develop test automation s/ware. Participate in design & code reviews. Write test plans according to system reqs. Maintain existing test plans & automated test scripts. Test telecom products. Support potential customers during lab trials. Must have BS in Computer Engineering, Comp Sci, EE or equiv, + 2 yrs exp in job offered or 2 yrs exp w/s/ware testing for the telecom industry. Including detailed knowledge of telecom protocols, general telecom procedures, & scripting. 40hrs/wk. Salary: \$75,000. Send 2 copies of resume to: Case#200300202, Division of Career Services, Labor Certification Unit, 19 Staniford St., 1st FL, Boston, MA 02114.

Infobahn Technologies delivers innovative IT Solutions to business clients nationwide. We have immediate full time opportunities for Software Engineers. All applicants must have a minimum BS in Computer Science Engineering or Related field plus 2 years of experience. Send resumes to: Infobahn Technologies, (HR) 288 Walnut St. #410 Newton, MA 02460.

IT PROFESSIONALS Senior Consultant

(Glen Mills, PA and other locations throughout the United States). Responsible for designing applications in the Telecommunications industry including implementation and testing of Siebel and WebMethods. Gather requirements, design and build modules in Siebel and build functionality for the data integration from Siebel to back-end applications utilizing Workflow Processes, Workflow Policies and Business Services. Responsible for gathering requirements and design for data integration in Web Methods between various front-end applications and back-end applications utilizing High Level event flow, Low Level event flow and Data structure mapping between applications. Responsible for custom coding in Visual Basic, e-Script, and Java and design and build project status applications in Microsoft Access using Visual Basic. Design and build Siebel modules using e-Script for Accounts and Contacts functionality while integrating data from Siebel to back-end applications. Design and build Java applications to test data integration between front end and back end applications and Java applications to log data flow in WebMethods. Responsible for designing and configuring billing modules in Arbor/BP to present billing information from Arbor/BP to front end applications.

The wage offered is \$75,780/year. The work schedule is Monday-Friday 9:00am-5:00pm. The minimum requirements are as follows: Bachelor's degree or equivalent in Engineering (any), Information Systems, Computer Science or Mathematics plus 3 years experience in the job offered or 3 years experience as a Senior Consultant, Consultant, or Systems Analyst. Employer will regard a foreign degree to be equivalent to a U.S. Bachelor's degree as determined by an accredited credentials evaluation service. Related experience must also include at least 1 year of implementation or testing of Siebel & WebMethods, custom coding in Visual Basic, e-Script, and Java, and designing and configuring billing modules in Arbor/BP.

Please send your resume, referencing Job Order Number WEB439173 to the: PA CareerLink, FLC Unit, 235 W. Chelton Avenue, Philadelphia, PA 19144. EOE

Business Analyst sought by Fairfield, CT Outsource Service Provider Company. Duties: Analysis of new business requirements and product enhancement. Synthesis of new business requirements into detailed technical product development specifications. Monitoring and management of the entire cycle of ongoing development projects, including scheduling, code delivery, functional and overall testing, and deployment into our production environment. Analysis and resolution of technological and business-logic related issues. Management of our Quality Assurance team. Must have experience in and knowledge of databases SQL, N-tiered applications principles, ASP and VB programming Object-oriented analysis and design, Unified Modeling Language, Automated testing tools and bug tracking software. Must interact and communicate with the back office employees of our sister company who are based in Uzbekistan. Must also have experience in dealing with financial markets, banking principles and accounting. Job to be performed in Fairfield, CT and various unanticipated clients sites in the U.S. as assigned. The selected candidate must be able to converse, read and write in the Russian language. Req. A Bachelors Degree or Equivalent, in either Applied Math/Comp. Sci., Business or Economics, and two years of experience in the job offered or related occupation. Hours: 9:00 AM to 5:00PM, Mon-Fri, 40 hrs/wk. Apply to, ATTN: BA Position, Foundation Source Philanthropic Services, Inc., 55 Walls Drive, 3rd Fl., Fairfield, CT 06824.

V.L.S. Systems is a software development and consulting co with multiple openings for Software Engineers, DBA's, Programmer Analysts, QA Testers, Financial Analysts and Project Managers to work at client sites in VA, IL, PA and other sites throughout the U.S. Individuals must have a minimum of a Bachelor Degree and two years relevant experience. We are seeking individuals with various combinations of the following skills I: Siebel, Oracle Apps, Peoplesoft, SAP, MS SQL, SCADA, DB2, Sybase, Abinitio, Tuxedo, OLAP, ETL development, Business Miner, VSAM, Mercator, Endeavor, SeeBeyond, C#, C++, VC++, ASP.NET, .net technologies, Business objects, Java, J2EE, JNDI, Jave Script, EJBs, Coldfusion, Perl, HTML, Cobol, CICS, MVS/ESA, Unisys, COM+, MTS, Cognos, Websphere, Weblogic, WSAD, MVC Architecture, Unix, Windows NT, embedded related tools. Apply to: V.L.S. Systems, 9900 Main St, Suite. 304, Fairfax, VA 22031.

Sr. Oracle DBA sought by office products distribution company in Broomfield, CO to work in Broomfield and other unanticipated job sites in the U.S. to at a senior level, design, install, maintain, and administer large (10+ CPUs) OLTP ORACLE relational database management systems in a UNIX clustered environment. Design the architecture and physical infrastructure for the ORACLE relational database management systems. Design and establish physical data parameters. Engage in performance tuning. Create and implement security and back-up and recovery procedures. Provide user support and training. Engage in project management and design related software applications as required. Requires master's or equivalent. Master's or foreign equivalent in comp. sci., elec. eng or related field or bachelor's or foreign equivalent in comp. sci., elec. eng or related field plus 5 yrs of software database administration experience; 1 yrs Oracle database administration experience; 2 yrs exp. may be concurrent with the 5 yrs exp. required for the equivalence to a master's described above; working knowledge of designing database architecture and physical infrastructure, and performance tuning of large OLTP (10+ CPUs) ORACLE relational database management systems in a UNIX clustered environment. M-F, 8am-5pm; \$92,500/yr. Respond by resume to Employment Programs, PO Box 46547, Denver, CO 80202 and respond to JON CO 5085898.

Radian Information Systems is seeking system analysts, software engineers & IT consultants to work on ERP, data warehouse, mainframe using SAP, PeopleSoft, VB, ASP, Jave Script, VSS, VBScript, Web Methods, Cognos, Unix, Oracle etc. BS/MS with exp. Contact info@RadianInfoSys.com. EOE.

IT specialists wanted by ARWANO, Inc. for positions using Oracle, SQL, VB, C/C++, SAP, AS/400, RPGLE, COBOL/400, CL, SQL/400, Query/400, Oracle RDBMS, Developer 2000, Windows NT. Minimum is BS degree with IT experience. Travel maybe required. Apply et waseem@arwano.com. EOE.

Manager, IT Audit - Milwaukee, Wisconsin

Coordinates, manages and directs all aspects of active Information Technology (IT) audit projects throughout the company. Coordinates audit efforts within the Internal Audit department, including the general audit staff. Assigns and manages staff across multiple, simultaneous IT audits in various locations as needed. Recruits and maintains a highly qualified staff of IT audit professionals and provides the staff with training, guidance and growth opportunities. Recommends use of outside professional services to supplement the IT audit staff and participates in outsourcing decisions. Works with audit management and business units to establish risk-based audit plans. Ensures that audit results are reported in an objective and accurate manner to the appropriate levels of management. Ensures the accuracy and clarity of audit results and guides audit staff in the preparation of audit reports. Develops and maintains contacts with operational, financial and IT executives, to ensure an understanding and acceptance of audit requirements, approach and reporting. Maintains direct contact with external auditors to coordinate internal and external IT audit activities and to foster a free exchange of information. Supervises 4 to 5 individuals. Domestic and international travel required: 50%. Required is a Bachelor of Science degree in Management Information Systems or Computer Science and five years of experience as a Manager, IT audit or as an IT Auditor or Analyst. Applicants must have: had experience in performing internal or external IT audits to measure and analyze IT controls, systems and data security designs, and management information systems; had experience in leading and supervising other IT Auditors; had experience with the following software and hardware: UNIX, Windows 2000, PeopleSoft, SAP, Firewalls and other security hardware/software; had experience in performing IT audits in the following areas: financial (e.g., SAP/PeopleSoft), operational and manufacturing systems, e-business and security vulnerability and penetrations; and had experience in developing guidelines and/or recommendations for security frameworks and controls. Applicants must possess one of the following certifications: Certified Information Systems Auditor (CISA), Certified Information Systems Security Professional (CISSP), and/or Certified Internal Auditor (CIA). Must have proof of legal authority to work in the U.S. Qualified applicants please submit resume including job requisition #2138BR to M. Taft, P.O. Box 2086, Milwaukee, WI 53201-2086.

Sr. Application Development Specialist - Acting at a senior level, plans, coordinates and implements software application development and integration activities for directory services in a team environment. Works closely with customer representatives to establish customer requirements. Will translate high-level requirements into system design and creative solutions. Performs system design, development, and installation of complex multi-system applications in a geographically diverse environment. Will perform system testing and error correction. Develops conversion plans and procedures, and documents all phases of system development. Will use listed requirements during course of duties. Requires Masters Degree in Computer Science or Physics plus six years of experience in the job offered or six years of experience as System Analyst. Requires Implementation experience in LDAP-based Directory Services with knowledge of programming in schema definition, integration with legacy systems, data replication, and synch services in addition to experience with Visual basic, Visual C++, MFC, Crystal Reports, Active X and SQL Server databases, Web programming using multiple languages, software development life cycle for enterprise application implementations and experience with Project Management Methodology. In lieu of a Masters in Computer Science plus six years of experience employer will accept a Bachelors of Science or foreign degree equivalent plus eight years experience in job offered or in systems analysis or related field. Salary: \$90,591/year, 40 Hours/week, M-F, 8:00am to 5:00pm, Job Location: Mechanicsburg, PA. Job Order #: WEB 441439. Send resumes with reference to job order # to: Attn: M. Texter, Cumberland County CareerLink, 1 Alexandra Court, Carlisle, PA 17013.

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Full-time Oracle Applications Developer. Responsible for design and development of applications. Customization and production support of Oracle applications (11.03/11i) including core modules AR, AP, GL, Order Entry and Inventory. Work with Oracle 9i, forms 6i, Reports 6i, Oracle Warehouse builder9.0, ERWIN 3.0, PL/SQL, Visual Basic and web technology (ASP, VBscript, Javascript, Oracle Portal 3.0). Must have a Bachelors degree in Electrical and Electronics Engineering or related field. Foreign degree equivalent accepted. Must have four years of experience in job offered or position with same duties. Send resume to: Jennifer Matthews, Global Payments, 10 Glenlake Parkway, North Tower, Atlanta, GA 30328.

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(3 positions)

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Analyze, design, code test & document computer software using platforms/systems MVS, Unix, AIX, NT; languages PL/SQL, Shell scripts, Cobol, C++, Visual Basic, SAS, Java; databases Oracle, SQL; design computer applications for business problems & tech. support. Req. BS Comp. Sci. or Comp. Eng. & 2 yrs. exp. in job or 2 yrs. exp. as Software Eng. MS in Comp. Sci. or Comp. Eng. may be substituted for BS & 2 yrs. exp. Resume to Attn: Human Resources-SS, NCCI Holdings, Inc. 901 Peninsula Corporate Circle Boca Raton, FL 33487. No calls. We require a drug screen and background check. EEO/Smoke Free environment.

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Software Engineer - Tickets.com, Inc., located in Costa Mesa, CA, is looking for professionals to design, code & test small to medium software modules; participate in short term planning of IT projects & programs, among other duties. Req: Bachelor's degree in Comp Sci, Engg, Math or Tech or foreign equivalent; 2 yrs exp in job offered or 2 yrs exp in related occupations of Programmer Analyst, Systems Analyst, Consultant, Project Leader, Programmer or Programmer Trainee. Exp must involve Java, HTML, Perl & Oracle. Must be willing to travel to work-sites nationally. Employer deems 3 yrs of undergrad study + 1 or more yrs towards graduate study as meeting degree requirement. 40 hr/wk. Please fax resume to HR at 714-327-5512.

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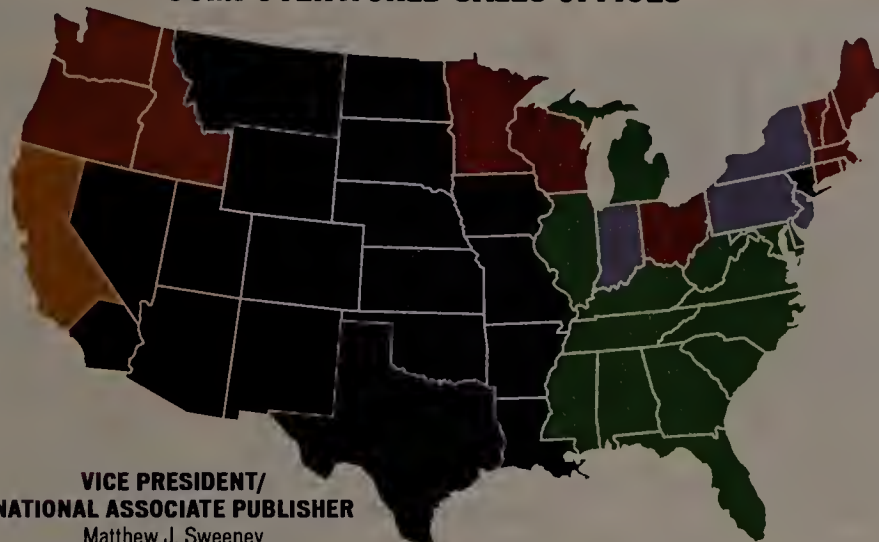
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Gateway PCs to Get New Chassis Design

BY MATT HAMBLIN

Gateway Inc., as part of its plans to focus more on business users, last week detailed a desktop PC that's due in the fall and could be the first system released with Intel Corp.'s new BTX chassis design.

BTX is expected to eventually replace the 10-year-old ATX design that's now widely used in PCs. The new chassis technology realigns components to maximize cooling. Among other things, it features a front fan that is 50% larger than the one on current PCs but runs more quietly, said Ken Loyd, director of business marketing at Gateway.

The primary driver for the

development of BTX is the fact that the processors used in PCs generate four times more heat than they did 10 years ago, while the heat produced by graphics cards is as much as 20 times greater than it once was, Loyd said.

He added that Poway, Calif.-based Gateway will offer PCs built around the new chassis design to consumers in September and to corporate users in mid-October under an E-6300 Series name. Pricing is expected to be less than current ATX models, which range from \$889 to \$1,269.

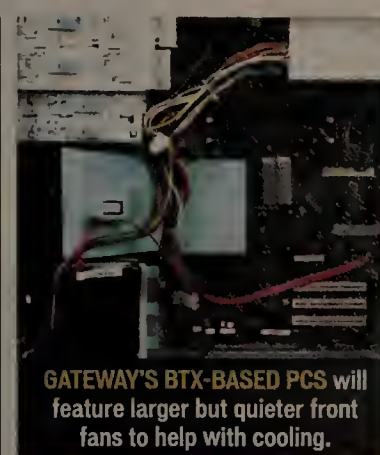
Using the BTX design is one in a series of changes that Gateway is making to reach

out to business users after closing all 180 of its retail stores in March, said Roger Kay, an analyst at market research firm IDC.

"The company imploded when they closed the stores, but they have been instituting a lot of financial discipline," Kay said. "They've done most of the trashing and burning and can rise again."

Kay said it's "bold" of Gateway to go to market with BTX-based products early, and he predicted that users will make the conversion rapidly, especially with Intel promoting the new chassis design.

In addition to its PCs, Gateway is now offering a range of other products designed to entice corporate IT managers, from servers to switches and wireless access points. For example, Gateway announced last week that it plans to offer



Intel's new Xeon processor with 64-bit support in its dual-CPU servers. "The rounded line will help them," Kay said.

David Kirkland, IT director at MasterCraft Boat Co. in Vonore, Tenn., said he already has several of Gateway's E-Series desktop PCs and plans to find out more about the upcoming BTX-based products. MasterCraft annually replaces about 50

PCs and might consider the new systems, he said.

The company has also bought laptops and servers from Gateway, as well as two plasma displays. "It helps that they provide a range of devices," Kirkland said, adding that Gateway also "blows away" competitors on price by as much as 10% to 15%.

This summer, Winona State University in Winona, Minn., is rolling out about 4,000 Gateway laptops for students and faculty as part of a seven-year contract valued at \$40 million, said Joe Whetstone, the school's vice president of IT. Gateway won the contract over other vendors primarily because it seemed to be the most willing to adapt to the school's needs. "They don't say, 'This is what we've got, take it or leave it,'" Whetstone said. **48655**

Continued from page 1

Biometrics

private sector has been slow to deploy them, mainly because of cost, reliability and standards issues, according to a newly released report from Burton Group.

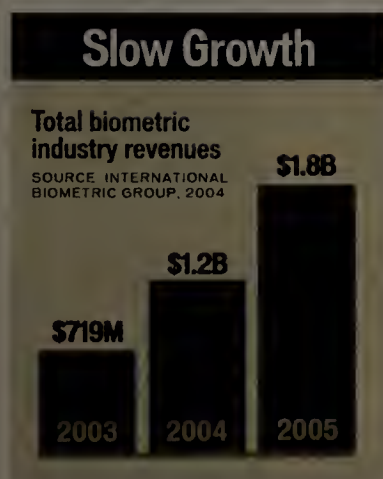
"Over the next two to three years, biometrics will remain a niche solution in enterprises rather than a technology that is deployed to the masses," the report said. And many users appear to agree.

"I think in time, use of this technology in the private sector will grow," said David Stacy, global IT security director at St. Jude Medical Inc., a \$1.9 billion maker of cardiovascular equipment in St. Paul, Minn. "I think a lot of companies are waiting for the prices to come down, and there is a sense among security professionals that these products have not been perfected yet."

Providence Health System in Seattle has examined bio-

metric technology "a bit in the past, somewhat casually," said David Rymal, the company's director of technology. Providence was looking at biometric products primarily as an alternative to the tokens it uses for two-factor authentication for remote users, Rymal said. But "the largest barrier to us has been interoperability, especially since our users are faced with multiple applications, and we haven't made much progress with single sign-on," he explained.

Midvale, Utah-based Burton Group's assessment comes at a



time when adoption of biometric technologies has been increasing in the public sector, thanks to programs such as the United States Visitor and Immigrant Status Indicator Technology (known as US-VISIT), the Transport Workers Identity Card and similar initiatives.

"There was a big bump in interest in these technologies after the terrorist attacks," said Gerry Gable, author of the Burton Group's report.

But so far, that interest has failed to generate even half the predicted uptake of these technologies in the private sector, experts said. In fact, only about one-third of the biometric industry's \$719 million in revenue in 2003 came from the private sector, according to the International Biometric Group (IBG) in New York.

The upfront cost of buying and integrating the needed hardware, software and middleware has been one major reason for the slow adoption in the private sector, Gable said.

According to analysts, per-user costs can easily exceed \$200 on just the hardware and middleware technologies, depending on the technology.

"While there are security concerns in the private sector, the funding is not there yet" for biometric products, said Donald Fisch, an analyst at IBG. "It will take proven success of the technologies before private-sector businesses deploy."

More work also needs to be done in terms of interoperability with existing enterprise user authentication technologies, analysts said.

Holding Off

The University of Wisconsin-Madison has done some "limited piloting" of biometric devices, but there are no immediate plans to implement them, said Kim Milford, information security manager at the university's department of information technology. Some of the challenges were interoperability, cost and high error rates. "In addition, there's

the human challenge [in] helping users to understand the technology and to overcome their concerns about privacy," she said. "Biometric evaluation still seems to be too intrusive to many people."

"Because of the hype after 9/11, people's expectations of the technology far exceeded the reality," said Maxine Most, president of Acuity Market Intelligence in Boulder, Colo. "Biometrics got pulled into the public eye prematurely."

In the long term, though, the stronger identity assurance and user convenience enabled by biometric technologies will drive increased enterprise use, said Tarvinder Sembhi, director of product management at Iridian Technologies Inc., a vendor of iris recognition technologies in Moorestown, N.J.

"We are seeing some early adopters that have deployed iris recognition to ensure that only the right people have the right access" to protected health information, Sembhi said. **48663**

FRANK HAYES ■ FRANKLY SPEAKING

Net Party Time

THIRTY-FIVE YEARS. It seems like about a century, doesn't it? But it was 35 years ago this month that the Arpanet — the initial piece of today's Internet — began to go live. Sure, that's a fuzzy way of saying it. But it took a while. On Aug. 30, 1969, the first Arpanet node was set up at the University of California, Los Angeles. The second node wasn't ready at the Stanford Research Institute until Oct. 1. And the first attempt to log on across the Arpanet didn't happen until Oct. 29. (For the record, it crashed the network.)

Go ahead — party from now until Halloween. The Net is worth it.

1969 was a great year for technology. Ken Thompson at AT&T's Bell Labs wrote the first version of Unix that year. Ted Codd defined the relational database. Three IBM researchers — Charles Goldfarb, Edward Mosher and Raymond Lorie — lent their initials to GML, the ancestor of today's HTML and XML. And Xerox's Gary Starkweather combined photocopier technology with laser imaging to create the first laser printer.

They all changed the face of IT — and the way IT is used in business. But none has had as dramatic an impact as the Arpanet.

The rest changed how we do what we do. The Net changed the paradigm.

Wait, stop, don't leave! That's not just the usual buzzspeak. The Arpanet's impact really is qualitatively different from those of the other technologies.

Unix, relational databases, markup languages and laser printers proved their value by replacing existing operating systems, databases, text-coding schemes and printers. They let us do the same things as before, only better.

But the Arpanet — and the Internet — changed the way we think.

With the Net, IT went from being about number crunching and data processing to being about communications — between machines and between people.

After 35 years, the network isn't just the computer, as Sun Microsystems used to say. With Web services, the network is the application. With network-attached storage, it's the disk drive. With voice over IP, it's the telephone.

Add the Web, and the network is the radio and the TV. It's the confer-

ence room and the office. It's the retail store and the research library.

It's not just how we do IT. Increasingly, it's how the world does business.

The dark side? Sure, it's there. With the Net, physical collocation is no longer required, and physical security is no longer enough. And offshoring of information jobs becomes possible. And criminals halfway around the world attacking our systems became inevitable. And on the Web, every design flaw in our systems is exposed to customers, with no sales clerks or customer service agents to cover for us.

But the Net also lets our companies do business with customers they would never have approached before. It opens up new ways of cutting costs and adding value. It has dragged IT out of the back office and the glass house and made it indispensable to every step in the business process — from supply chains, logistics and manufacturing to sales, cross-marketing and customer care.

After 35 years, the Net really has brought us a long way. But not quite far enough.

After all, we still don't quite get it. Sure, we buy things on eBay and search with Google. We check our e-mail and load our iPods over the Internet. But we still talk about writing application code instead of wiring together Web services. We think in terms of data centers instead of network-attached everything.

Don't worry — we'll master it. Old habits of thinking are just tough to break.

But until we do, we'll have to celebrate the Arpanet's birthday the old-fashioned way.

And party like it's 1969. ☎ 48489



FRANK HAYES, *Computerworld's* senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

Don't DO That!

It's years ago at this busy circuit-board manufacturing facility, and the new component-insertion machine goes bonkers one morning. "It was sticking capacitors and resistors everywhere but where they belonged," says IT pilot fish. What changed overnight? "Maintenance thought someone might trip over a data cable," fish groans. "So they nailed it to the concrete floor."

Unplugged

Dust isn't the only problem for this U.S. Army communications unit in the desert. "One day, out of the blue, a senior officer who has no relationship to the operation walks into the tent and announces that there are too many electrical cords strewn about — and starts disconnecting them," says a pilot fish on duty. "Eight hours and four hard drives later, the systems are up and running again. And the senior NCO who is also the sysadmin is finally calm enough to get his weapon back."

Not Exactly

User tells help desk pilot fish that when she reboots the server, it says that it "can't find some drives." "It took several minutes of coaxing, coaching and cajoling to get her to read exactly what the message really said," fish grumbles. "And it turned out to be about missing *drivers*, not drives. Said the user, 'Drives, drivers — same difference!'"

Ergo Error

Support pilot fish gets a call that this remote office needs an ink-jet cartridge for its outgoing fax machine. When he

SHARK TANK

arrives, he tries printing a report, and it looks fine. "I ask the user

why he thought it needed a new cartridge," says fish. "He replied, 'I got a request to resend a fax because part of it was blank. So I assumed our machine was out of ink.'"

Priorities

At this pilot fish's company, power users get new high-end machines, and their old PCs go to users with lower requirements who can use the upgrade. "My reasonably new PC was scheduled to be upgraded, but the old and barely adequate box of the guy next to me, who did the same programming I did, was not," fish says. Why not? "They wouldn't upgrade his PC because it wasn't sufficient for the needs of anyone else in the company either."

Nothing New

After three days of hearing admins complain about a smell in the server room, support pilot fish investigates. The room does stink of sulfur — and there's a red light on the rack-mounted UPS. "That can't be it," admin tells fish. "That warning light has been on for three weeks."

SHARKY WANTS FRESH MEAT! Send your true tale of IT life to me at sharky@computerworld.com. You snag a snazzy Shark shirt if I use it. And check out the daily feed, browse the Sharkives and sign up for Shark Tank home delivery at computerworld.com/sharky.



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The information is there,
but can you find it?

Today one of the great challenges facing IT is the ability to manage staggering amounts of information. Which is why we created HP StorageWorks Reference Information Storage System (RISS), a powerful new solution capable of organizing, archiving and securely storing information so it can be found and retrieved quickly. HP RISS reduces the cost and complexity of your network and ensures when you have all your information at your fingertips, change comes easy.

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